

KF 27

.M473

1991i



**THE ENVIRONMENTAL ROLE OF THE NATIONAL
OCEANIC AND ATMOSPHERIC ADMINISTRATION
AND THE U.S. COAST GUARD IN THE PERSIAN
GULF CONFLICT**

HEARING FEB 13 1992

BEFORE THE

SUBCOMMITTEES ON

**OCEANOGRAPHY, GREAT LAKES AND THE
OUTER CONTINENTAL SHELF**

COAST GUARD AND NAVIGATION

AND

**FISHERIES AND WILDLIFE CONSERVATION
AND THE ENVIRONMENT**

OF THE

**COMMITTEE ON
MERCHANT MARINE AND FISHERIES
HOUSE OF REPRESENTATIVES**

ONE HUNDRED SECOND CONGRESS

FIRST SESSION

**OVERSIGHT HEARING ON THE ECOTERRORISM
INFLECTED AS A RESULT OF THE PERSIAN GULF WAR**

OCTOBER 17, 1991

Serial No. 102-44

Printed for the use of the Committee on Merchant Marine and Fisheries



U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1992

50-374

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402

ISBN 0-16-037257-7

COMMITTEE ON MERCHANT MARINE AND FISHERIES

WALTER B. JONES, North Carolina, *Chairman*

GERRY E. STUDDS, Massachusetts
CARROLL HUBBARD, Jr., Kentucky
WILLIAM J. HUGHES, New Jersey
EARL HUTTO, Florida
BILLY TAUZIN, Louisiana
THOMAS M. FOGLIETTA, Pennsylvania
DENNIS M. HERTEL, Michigan
WILLIAM O. LIPINSKI, Illinois
ROBERT A. BORSKI, Pennsylvania
THOMAS R. CARPER, Delaware
ROBIN TALLON, South Carolina
SOLOMON P. ORTIZ, Texas
CHARLES E. BENNETT, Florida
THOMAS J. MANTON, New York
OWEN B. PICKETT, Virginia
GEORGE J. HOCHBRUECKNER, New York
BOB CLEMENT, Tennessee
STEPHEN J. SOLARZ, New York
FRANK PALLONE, Jr., New Jersey
GREG LAUGHLIN, Texas
NITA M. LOWEY, New York
JOLENE UNSOELD, Washington
GENE TAYLOR, Mississippi
GLENN M. ANDERSON, California
JOHN F. REED, Rhode Island
WILLIAM J. JEFFERSON, Louisiana
ENI F.H. FALCOMA, American Samoa

ROBERT W. DAVIS, Michigan
DON YOUNG, Alaska
NORMAN F. LENT, New York
JACK FIELDS, Texas
HERBERT H. BATEMAN, Virginia
JIM SAXTON, New Jersey
HELEN DELICH BENTLEY, Maryland
HOWARD COBLE, North Carolina
CURT WELDON, Pennsylvania
WALLY HERGER, California
JAMES M. INHOFE, Oklahoma
PORTER J. GOSS, Florida
ARTHUR RAVENEL, Jr., South Carolina
SONNY CALLAHAN, Alabama
WAYNE T. GILCHREST, Maryland
JOHN T. DOOLITTLE, California
RANDY "DUKE" CUNNINGHAM, California

EDMUND B. WELCH, *Chief Counsel*

MARY J. KITSOS, *Chief Clerk*

GEORGE D. PENCE, *Minority Staff Director/Chief Counsel*

SUBCOMMITTEE ON OCEANOGRAPHY, GREAT LAKES AND THE OUTER CONTINENTAL SHELF

DENNIS M. HERTEL, Michigan, *Chairman*

BILLY TAUZIN, Louisiana
BOB CLEMENT, Tennessee
WILLIAM J. HUGHES, New Jersey
FRANK PALLONE, Jr., New Jersey
GENE TAYLOR, Mississippi
WILLIAM O. LIPINSKI, Illinois

HERBERT H. BATEMAN, Virginia
JIM SAXTON, New Jersey
CURT WELDON, Pennsylvania
WALLY HERGER, California
ROBERT W. DAVIS, Michigan (Ex Officio)

WALTER B. JONES, North Carolina
(Ex Officio)

BRIAN O'MALLEY, *Counsel*

RAY O'MALLEY, *Counsel*

DEBORAH DAWSON, *Counsel*

JOHN RAYFIELD, *Minority Professional Staff*

(11)

92-16530

KF-27
M473
1991i

SUBCOMMITTEE ON COAST GUARD AND NAVIGATION

BILLY TAUZIN, Louisiana, *Chairman*

BOB CLEMENT, Tennessee	JACK FIELDS, Texas
JOHN F. REED, Rhode Island	DON YOUNG, Alaska
WILLIAM J. HUGHES, New Jersey	HERBERT H. BATEMAN, Virginia
EARL HUTTO, Florida	HOWARD COBLE, North Carolina
THOMAS R. CARPER, Delaware	JAMES M. INHOFE, Oklahoma
OWEN B. PICKETT, Virginia	PORTER J. GOSS, Florida
GEORGE J. HOCHBRUECKNER, New York	SONNY CALLAHAN, Alabama
FRANK PALLONE, Jr., New Jersey	WAYNE T. GILCHREST, Maryland
GREG LAUGHLIN, Texas	ROBERT W. DAVIS, Michigan (Ex Officio)
NITA M. LOWEY, New York	
GENE TAYLOR, Mississippi	
GLENN M. ANDERSON, California	
GERRY E. STUDDS, Massachusetts	

WALTER B. JONES, North Carolina
(Ex Officio)

ELIZABETH MEGGINSON, *Staff Director/Counsel*
WILLIAM WRIGHT, *Professional Staff*
HARRY BURROUGHS, *Minority Professional Staff*

SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION AND THE ENVIRONMENT

GERRY E. STUDDS, Massachusetts, *Chairman*

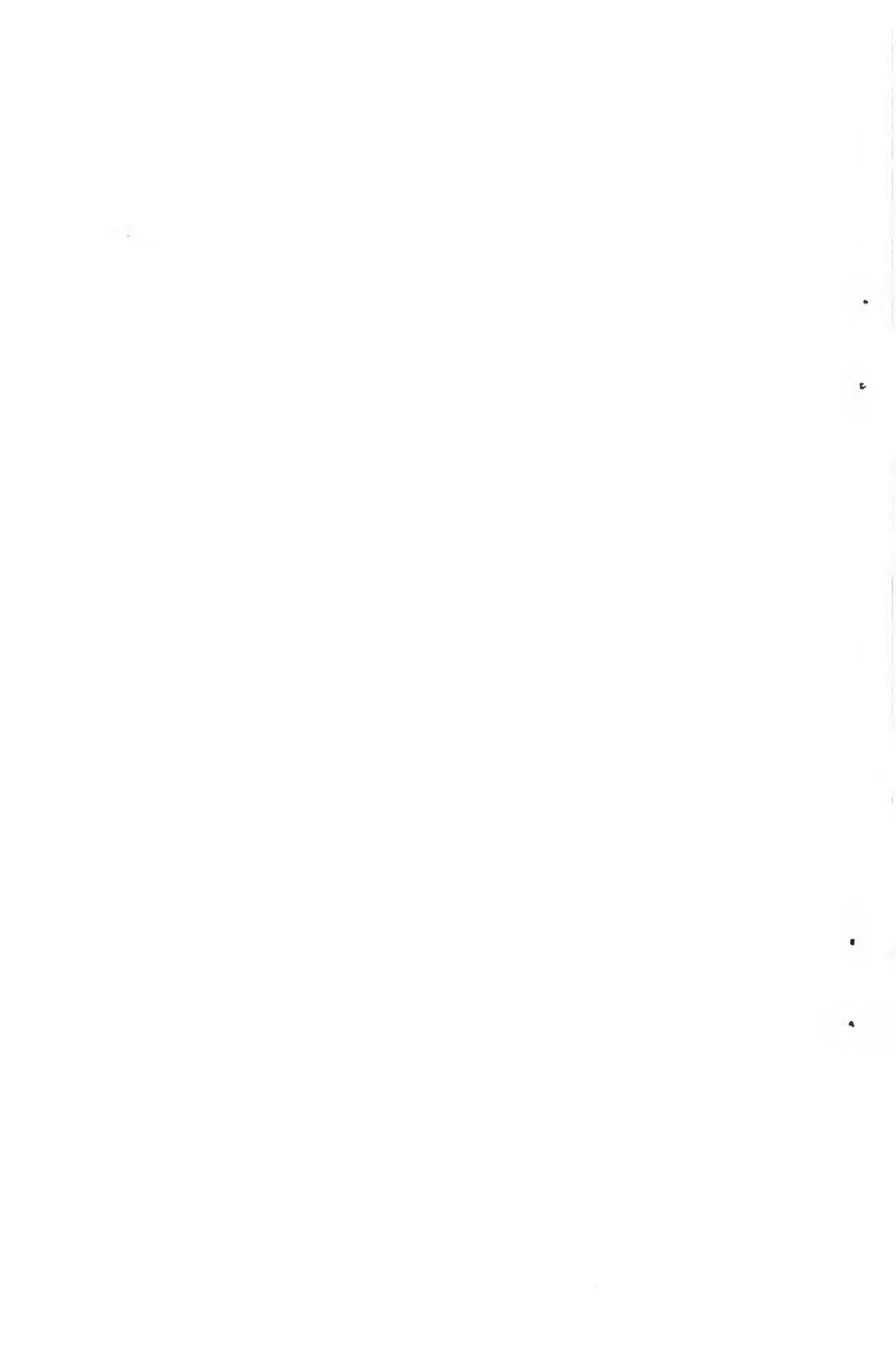
WILLIAM J. HUGHES, New Jersey	DON YOUNG, Alaska
EARL HUTTO, Florida	JIM SAXTON, New Jersey
THOMAS R. CARPER, Delaware	HOWARD COBLE, North Carolina
ROBIN TALLON, South Carolina	CURT WELDON, Pennsylvania
SOLOMON P. ORTIZ, Texas	WALLY HERGER, California
THOMAS J. MANTON, New York	PORTER J. GOSS, Florida
GEORGE J. HOCHBRUECKNER, New York	ARTHUR RAVENEL, Jr., South Carolina
STEPHEN J. SOLARZ, New York	WAYNE T. GILCHREST, Maryland
FRANK PALLONE, Jr., New Jersey	JOHN T. DOOLITTLE, California
JOLENE UNSOELD, Washington	ROBERT W. DAVIS, Michigan (Ex Officio)
GREG LAUGHLIN, Texas	
NITA M. LOWEY, New York	
GLENN M. ANDERSON, California	
JOHN F. REED, Rhode Island	
WILLIAM J. JEFFERSON, Louisiana	
ENI F.H. FALOMAVAEGA, American Samoa	

WALTER B. JONES, North Carolina,
(Ex Officio)

JEFF PIKE, *Staff Director*
WILL STELLE, *Counsel*
ROD MOORE, *Minority Professional Staff*

CONTENTS

Hearing held October 17, 1991	Page 1
Statement of:	
Anderson, Hon. Glenn M., a U.S. Representative from California	6
Bateman, Hon. Herbert H., a U.S. Representative from Virginia	3
Blackwelder, Dr. Brent, Acting President, Friends of the Earth	50
Prepared statement	115
Coble, Hon. Howard, a U.S. Representative from North Carolina	7
Colson, David, Deputy Assistant Secretary for Oceans and Fisheries Affairs, U.S. Department of State	18
Prepared statement	95
Davis, Hon. Robert W., a U.S. Representative from Michigan	3
Earle, Dr. Sylvia, Chief Scientist, National Oceanic and Atmospheric Administration	9
Prepared statement	61
Fields, Hon. Jack, a U.S. Representative from Texas	4
Golob, Richard S., President, World Information Systems; and Publisher, Golob's Oil Pollution Bulletin (prepared statement)	127
Goss, Hon. Porter J., a U.S. Representative from Florida	4
Hertel, Hon. Dennis M., a U.S. Representative from Michigan, and Chairman, Subcommittee on Oceanography, Great Lakes and the Outer Continental Shelf	2
Holt, Captain William F., Chief, Office of Marine Environmental Protection, U.S. Coast Guard	14
Prepared statement	82
Jensen, Captain Donald, Commanding Officer, National Strike Force Command Center, U.S. Coast Guard	17
Prepared statement	91
Pelosi, Hon. Nancy, a U.S. Representative from California	8
Tauzin, Hon. Billy, a U.S. Representative from Louisiana, and Chairman, Subcommittee on Coast Guard and Navigation	1
Usher, David, President, Marine Pollution Control Corporation	40
Prepared statement	106
Weldon, Hon. Curt, a U.S. Representative from Pennsylvania	7
Young, Hon. Don, a U.S. Representative from Alaska	6
Additional material supplied:	
Hertel, Hon. Dennis M. (Chairman, Oceanography Subcommittee): The Wall Street Journal, Vol. CCXVIII, No. 75, article of Tuesday, October 15, 1991, "Legacy of War, The Battles Are Over, But Gulf Environment Still Fights for Its Life"	134



THE ENVIRONMENTAL ROLE OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND THE U.S. COAST GUARD IN THE PERSIAN GULF CONFLICT

THURSDAY, OCTOBER 17, 1991

HOUSE OF REPRESENTATIVES, SUBCOMMITTEE ON OCEANOGRAPHY, GREAT LAKES AND THE OUTER CONTINENTAL SHELF, THE SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION AND THE ENVIRONMENT, AND THE SUBCOMMITTEE ON COAST GUARD AND NAVIGATION, COMMITTEE ON MERCHANT MARINE AND FISHERIES,

Washington, DC.

The subcommittees met, pursuant to call, at 10:10 a.m., in Room 1334, Longworth House Office Building, Hon. Billy Tauzin (Chairman, Subcommittee on Coast Guard and Navigation) presiding.

Members present: Representatives Tauzin, Davis, Hertel, Tallon, Ortiz, Hochbrueckner, Pallone, Laughlin, Taylor, Anderson, Young, Fields, Bateman, Coble, Weldon, Inhofe, and Goss.

Staff present: Tom Kitsos, Senior Policy Analyst; Sue Waldron, Press Secretary; Brian O'Malley, Subcommittee Counsel; Debbie Dawson, Subcommittee Counsel; Dan Ashe, Senior Professional Staff; Joan Bondareff, General Counsel; Chris Mann, Professional Staff; Charly Moore, Counsel; Jim McCallum, Professional Staff; Cynthia Wilkinson, Counsel; Jeff Pike, Professional Staff; Donna Napiewocki, Subcommittee Clerk/Professional Staff; Tom Melius, Minority Professional Staff; Elizabeth Megginson, Coast Guard Subcommittee Counsel/Staff Director; Lisa Pittman, Minority Counsel; Sherry Steele, Minority Professional Staff; Harry Burroughs, Minority Professional Staff; Laurel Bryant, Minority Professional Staff; Kathryn Gibbens, Subcommittee Clerk; Robert Wharton, Professional Staff; Mike Quigley, NOAA Fellow; Terry Schaff, Sea Grant Fellow; Jim Adams, Coast Guard Fellow; Jill Brady, Sea Grant Fellow; and Hoyt Wheeland, NOAA Fellow.

OPENING STATEMENT OF HON. BILLY TAUZIN, A U.S. REPRESENTATIVE FROM LOUISIANA, AND CHAIRMAN, SUBCOMMITTEE ON COAST GUARD AND NAVIGATION

Mr. TAUZIN. This hearing will please come to order. Please settle down so that we can get started. We may have votes on the floor. We may be interrupted, and we really need to get rolling.

Today, three subcommittees of the Merchant Marine and Fisheries Committee are conducting an oversight hearing on the worst

and cruelest form of ecoterrorism ever inflicted on this planet. We have invited witnesses who have a firsthand understanding of efforts to assist the governments of Saudi Arabia and Kuwait and the status in the cleanup and restoration of the Arabian Gulf oil spill and the oil well fires.

The memories of the victory from the war in the Arabian Gulf are still fresh. So is the oil. At my request, I have received pictures that I will now pass around showing the oil damage that still remains in the Arabian Gulf. Some of these pictures were taken just two weeks ago. The oil is killing and destroying precious mangrove swamps, sensitive environmental areas that are breeding grounds for fish and wildlife especially endangered sea turtles, and around 400 miles of beaches.

Saddam Hussein's act of ecoterrorism still has gone unanswered. Today, we will begin to inquire into this and to urge the United Nations to take steps in encouraging our friends in Saudi Arabia and Kuwait to begin the cleanup and the restoration. We must also demand the United Nations take the necessary steps to require that Saddam Hussein pay for the cost of the cleanup and the restoration of the Gulf.

The New World Order may have witnessed the victory that we won in the war in the Arabian Gulf, but we also witnessed simultaneously the devastation and the loss of important marine environment in and around the Arabian Gulf. It is time now that we begin to try to win back the Gulf as we won the war.

I am now pleased to recognize the Honorable Dennis Hertel, the Chairman of the Subcommittee on Oceanography, Great Lakes and the Outer Continental Shelf, who is co-chairing this hearing on the oil spill in the Arabian Gulf. Mr. Hertel.

STATEMENT OF HON. DENNIS M. HERTEL, A U.S. REPRESENTATIVE FROM MICHIGAN, AND CHAIRMAN, SUBCOMMITTEE ON OCEANOGRAPHY, GREAT LAKES AND THE OUTER CONTINENTAL SHELF

Mr. HERTEL. Thank you, Chairman Tauzin. Nearly nine months ago, Iraqi forces occupying Kuwait extended their systematic pillaging of that unfortunate country to the waters of the Persian Gulf. First, by artillery shelling of shore-based oil storage tanks; and later, by deliberate pumping of oil from terminals and tankers, Iraq unleashed the largest oil spill of all time.

Latest estimates put the spill at upwards of six million barrels. That is about 30 times the volume of the *Exxon Valdez* spill. The slick eventually expanded over 600 square miles, fouling 400 miles of coastline. The impact on the Gulf's marine life was devastating. Preliminary counts indicated some 20,000 shorebirds alone were killed by the slick.

The long-term effects of the spill on the Gulf's ecosystem are not yet known, but populations of sea turtles, marine mammals, and highly-valued commercial fish and shellfish stocks are seriously threatened. Worse yet, the damage to fragile sea grass beds, algal flats, and mangrove stands may jeopardize chances for the rapid recovery of animal life.

Saddam Hussein's malicious oil discharge, coupled with the torching of hundreds of oil wells, was a deliberate and unprecedented act of ecoterrorism; international crimes that warrant full retribution.

This morning, witnesses from NOAA, the Coast Guard, the State Department, Friends of the Earth, and the Marine Pollution Control Corporation will provide us with an update of the current status of the Persian Gulf ecosystem and of the ongoing efforts to revive it.

Apart from just a damage assessment, I hope that today's hearing gives us the information required to seek full reparation from the government of Iraq for this senseless environmental destruction.

Let me say I am very angry today as we focus on this because our subcommittees before have held hearings on what happened in Alaska. That was a tragic accident that could have been prevented, but it was an accident. And we have heard testimony and evidence of how the cleanup even made that damage worse, and so we know how impossible virtually it is once this damage is done to return the ecosystem and all the rest to where it was before.

For one person to cause this type of destruction on purpose, the worst in history, there must be retribution. We must make sure this doesn't happen again. Other opening statements?

Mr. TAUZIN. Ladies and gentlemen, as I said, this is a joint hearing of three of the subcommittees of Merchant Marine and Fisheries, and we have a very busy agenda, but I will now recognize, I guess—which one of you gentlemen would like to go first? Mr. Bateman, for an opening statement from the minority.

STATEMENT OF HON. HERBERT BATEMAN, A U.S. REPRESENTATIVE FROM VIRGINIA

Mr. BATEMAN. Thank you, Mr. Chairman. I have no opening statement, but I would ask unanimous consent that the statements of my colleague from Michigan, Mr. Davis, and my colleague, Mr. Goss, from Florida be entered into the record. And I welcome the witnesses. We look forward to the information that they will be giving to us on a very important subject.

[The statements of Mr. Davis and Mr. Goss follow:]

STATEMENT OF HON. ROBERT W. DAVIS, A U.S. REPRESENTATIVE FROM MICHIGAN

Chairman Hertel, thank you for convening this hearing. Now that the dust has cleared (except where the oil well fires are still burning perhaps), the role that NOAA and the Coast Guard played in assisting the Kuwait and Saudi Governments in containing and cleaning up the Persian Gulf oil spill and oil well fires can be studied. Given the wartime conditions and the extent of the environmental havoc, these agencies should be applauded for their timely and helpful work.

Although the Persian Gulf ecosystem may not recover for some time, perhaps there is some good which can be found in this catastrophe—some lessons in dealing with future environmental disasters on an international basis. I know the Coast Guard followed the recently negotiated International Convention on Oil Pollution Preparedness, Response and Cooperation and it appeared to operate well. Our friends in the Senate should soon ratify this agreement so that a response system, much like that created by us in the Oil Pollution Act of 1990, is in place in case of future massive oil spills.

STATEMENT OF HON. PORTER J. GOSS, A U.S. REPRESENTATIVE FROM FLORIDA

Mr. Chairman, I commend the distinguished subcommittee chairmen for bringing this issue back to the forefront. It has been almost a year since that dreadful day when Saddam Hussein decided to wreak havoc on the world by deliberately releasing millions of gallons of oil into the Persian Gulf and torching hundreds of Kuwaiti oil wells. Because this act of ecoterrorism is already old news—history—there is a tendency in the press and in the Congress to move on to the next crisis. Unfortunately, the sad reality is that the crisis is not over—the Persian Gulf region is still suffering from one man's warped desire for power, and will continue to suffer for years to come.

Many of you may remember the passage of my bill, H. Con. Res. 57, whereby Congress conveyed the message to the United Nations that Saddam Hussein must be held liable for *all* of the costs associated with these environmental catastrophes. The United Nations heard our cry and responded appropriately, but that is not enough. Everyone in this room knows that unless we stay on top of this issue, we will never see retribution from Saddam Hussein. My fear is that the entire financial burden of restoring the natural resources in the Persian Gulf region will ultimately fall on the rest of us.

This man still sits in power, arrogantly thumbing his nose at the United States. I have said it before, and I will say it again—let's send the bill to Saddam!

Mr. TAUZIN. Thank you, Mr. Bateman.

Mr. Chairman—

Mr. HERTEL. Mr. Tauzin.

Mr. TAUZIN [continuing]. Before we go any further with other opening statements, I had indicated when I opened the hearing that we had some photographs that were recently delivered to our subcommittee. They were taken just two weeks ago, and we have photographs going back to May as well that indicate the damage that existed months ago and the damage that still exists in the Arabian Gulf. These photographs were taken by a company called Veco which is the prime contractor for the Exxon oil spill cleanup in the Alaskan oil spill and which has a relationship with, I think, the government of Saudi Arabia in terms of being one of the contractors charged with estimating the damage in the Gulf of Arabia and the estimated cost of cleanup.

They have estimated, I think, a half billion dollar cost for cleanup, and these pictures, I think, will illustrate to the subcommittee and to those who are interested that the damage is extraordinarily extensive and is still there. And if the staff would be so kind to pass these around, I think it will serve as a vivid example of why we are here today. And I turn back the chair to Mr. Hertel.

Mr. HERTEL [presiding]. Mr. Coble. I am sorry. Mr. Fields first.

STATEMENT OF HON. JACK FIELDS, A U.S. REPRESENTATIVE FROM TEXAS

Mr. FIELDS. Good morning, Mr. Chairman. I first of all want to compliment and single out Chairman Tauzin because as Chairman of the Coast Guard Subcommittee, he has been a dominant leader in the Congress on oil spill cleanup. And I wanted to say that because that type of accolade is due, and I certainly enjoy and am honored to serve with Chairman Tauzin. I would also like to say to all the distinguished subcommittee chairmen that I appreciate you scheduling this hearing today. I think it is very important.

While Saddam Hussein was humiliated on the battlefield, regrettably, no one could stop that madman from intentionally releasing six million barrels of oil into the Persian Gulf.

This despicable act of terrorism, coupled with the detonation of hundreds of onshore Kuwaiti oil wells, has produced massive environmental damage. It has also demonstrated that certain despots will do almost anything, including deliberately destroying our environment, in the process of fighting a war.

And it has really been difficult to quantify the impact of his eco-terrorism. Nevertheless, we do know that the oil spills by themselves created one of the largest environmental catastrophes in world history. By comparison, these spills were 30 times larger than the *Exxon Valdez* tanker accident.

While the Persian Gulf is a warm body of water, it is relatively shallow and it is essentially a closed ecosystem with only one outlet at the Strait of Hormuz. It will, therefore, take three to five years to flush out and remove this fouled water, which is a significantly longer period than the 28 days it takes to cleanse Prince William Sound.

Although nine months have passed since these terrorist acts occurred, this is an appropriate time to assess the environmental damage caused by these multiple oil spills and to examine how our Coast Guard and the National Oceanic and Atmospheric Administration assisted in the cleanup effort. It is also appropriate to ask whether there is a need to establish an international oil spill contingency plan, and I would hope, Chairman Tauzin, that this is something we would explore within our subcommittee, and whether the United States Congress should, as I believe, now implement the International Oil Spill Protocols.

Mr. Chairman, during the Persian Gulf crisis, the Coast Guard dispatched two radar-surveillance aircraft which performed the essential service of tracking the spread of these oil spills. And I am proud of the fact that four of the companies fighting the oil well fires in Kuwait are Houston-based firms. Those firms are: Boots and Coots, and I went to school with the children of Coots Matthews; Cudd Pressure Control, Inc.; Wild Well Control, Inc.; and the internationally famous Red Adair Company. These Americans are doing a superb job, and they are representing our country in the finest fashion.

Finally, it is my hope through this hearing process we can encourage this Administration to again strongly urge the government of Iraq to comply with the provisions of U.N. Resolution 687. This Resolution reads in part that: "Iraq . . . is liable under international law for any direct loss, damage, including environmental damage and the depletion of natural resources." Iraq agreed to this Resolution on April 6, 1991, and it is high time they paid some, if not all, of the five billion that the Journal of Environmental Health has estimated it will cost to repair the Persian Gulf environment.

Mr. Chairman, the world must not allow this lunatic to avoid his international obligations, and Iraq must financially compensate those who have been so victimized by these terrorist acts.

And I will just say in closing that I would hope that our full committee would take the lead in working to make sure that this compensation comes forward, that we are the leaders in acting in a proactive sense for that compensation. Thank you, Mr. Chairman.

Mr. HERTEL. Mr. Anderson of California.

**STATEMENT OF HON. GLENN M. ANDERSON, A U.S.
REPRESENTATIVE FROM CALIFORNIA**

Mr. ANDERSON. Thank you, Mr. Chairman. I want to compliment you for holding this hearing. The deliberate oil spill started by Saddam Hussein, larger by far than any mankind has seen before, has obviously been disastrous for the ecosystem of the Persian Gulf. Unfortunately, with the end of the hostilities, the network TV stations, alas, even CNN, have retreated from the Gulf, and we have heard little about the effects of this spill. It was news when it threatened the Saudi water desalination plants but doesn't seem to be news when it continues to threaten this sensitive habitat. I look forward to hearing about the present impact of this spill, and I hope we can take what we learn today and apply it to our own efforts, both domestic and international, to clean up oil spills.

I also hope we hear from the panel before us on the effects of the oil well fires. We heard long ago that these fires didn't have any global significance, but the scientific analysis doesn't seem to make intuitive sense to me when I hear statistics such as the fires emitting over 10 times the air pollutants of the output of all the United States industrial and utility plants combined. What I think we should keep firmly in mind is that the destruction that we are going to hear about today was a deliberate act on the part of one man, Saddam Hussein. Some have criticized the Gulf War because of this spill and the oil fires. In my view, that is a ridiculous criticism because this never had to happen. Thank you.

Mr. HERTEL. Mr. Young of Alaska.

**STATEMENT OF HON. DON YOUNG, A U.S. REPRESENTATIVE
FROM ALASKA**

Mr. YOUNG. Thank you, Mr. Chairman and Mr. Tauzin. I am pleased that you are holding these hearings. My interest in this, of course, as being the Congressman from Alaska is the effect of the *Exxon Valdez* spill on Alaska and how it was handled and as mentioned by the previous speaker, 10 times worse in the Persian Gulf. It is actually about 30 times worse.

Mr. ANDERSON. OK.

Mr. YOUNG. And my frustration is that the outcry of rage against an American-owned company, the public really feeling as if the environment had been destroyed, and yet as the gentleman from California has mentioned, there is very little outcry of rage, other than this committee, from those in the audience that, very frankly, made statements that were totally untrue. But one good thing did come out of the *Exxon Valdez* spill. We, I think, have developed an expertise in cleanup. The head manager of the cleanup did an excellent job. The agencies did a good job. Those sitting at the table did a good job. But even the agencies sitting at the table now, I think, have a responsibility of showing the same concern about the oil spill in the Persian Gulf created by one lunatic. It is important to me to recognize that this world and, unfortunately, if some of the environmental movement doesn't push for this, is not just countries, it is a world. And I believe that not only should Saddam Hussein be held responsible for this, but I think, very frankly, this area should be addressed immediately with the exper-

tise acquired in Alaska. And the gentleman from Texas mentioned some of his people fighting the fires. We were involved in the cleanup, not the fires. They didn't let us burn, unfortunately. Very frankly, it would have solved a lot of our problems. But some people didn't think it would. But, Mr. Chairman, I am pleased you are holding these hearings, but I hope out of this that these agencies before us today encourage the State Department, which I think has been dragging its feet primarily because it is not popular anymore in the media, that they start insisting that this world ecology disaster be addressed, it be cleaned to its best ability, to be straightened out, and make sure that, in fact, the moneys from the villain is—we have already been granted a \$1.6 billion oil sale, but I don't see anything in the oil sale for the cleanup. And I think that is part of the role of this committee and the full committee to make sure that the expertise is used from America, and, in fact, that this disaster is addressed. Thank you, Mr. Chairman.

Mr. HERTEL. Mr. Coble.

STATEMENT OF HON. HOWARD COBLE, A U.S. REPRESENTATIVE FROM NORTH CAROLINA

Mr. COBLE. Very briefly, Mr. Chairman. I will reiterate what has been said generally. I am concerned in that I have heard virtually nothing as to what can be done to demand that Iraq make reparations for the damage that was done. Now, perhaps the final form is the United Nations, but it appears to me that we have a distinguished panel here today, certainly the accumulation of good minds together. The Congress should certainly be a player. This committee specifically should be a player, but I think that should be the number 1 question we should emphasize today. Thank you, Mr. Chairman.

Mr. HERTEL. Mr. Weldon.

STATEMENT OF HON. CURT WELDON, A U.S. REPRESENTATIVE FROM PENNSYLVANIA

Mr. WELDON. Thank you, Mr. Chairman, and I too will make a brief opening statement and thank our distinguished panel for being here today. I have been to Kuwait three times in the last several years including, approximately, one week after Kuwait City was liberated with Secretary Mosbacher and Ambassador El Sabal on the first trip back into that city and spent several days in Kuwait City. And to be very honest with you, I have been frustrated for the last several months—actually, seven or eight months—with the lack of coordinated support for the American and other allied nation forces that are in there attempting to deal with the oil well fires. Red Adair is a good and close personal friend of mine. He and I were on a program together in March where he threatened publicly at a press conference that he and I both held to pull out of Kuwait because he was not getting the support from both our Government and from the involved governments in bringing in the necessary materials to extinguish and cap the well fires. This included bulldozers, lodging for the workers, water supply lines, and other basic items that were available to him but he could not cut through the red tape to get these materials into Kuwait.

At that time, I wrote a very stinging letter to President Bush asking that a task force at the State Department and Commerce Department assist Red Adair and the other teams that were there at that time. Yet, Red continued to be frustrated. One of my main concerns is why were the contractors that were there in their early days, have to be so frustrated? What did we not do? What could we have done to better support Red and others? Now we have some 30 teams in there from throughout the world, they have extinguished the bulk of the well fires as we all know. But during that critical period of time, we could have done much more to prevent the extensive environmental damage that was done.

The second point that I would like to address during today's hearing is the documentation of evidence that could be used in a war crimes tribunal against Saddam Hussein. The Congressional Task Force in occupied Kuwait in conjunction with the Human Rights Caucus held a hearing the last week of July where we heard from experts on war crimes. One of the areas that the Human Rights Caucus will focus on is the environmental terrorism that was done by Saddam. I would like to know from the witnesses today what interaction you have had with anyone, if any, in terms of documenting the specifics of what occurred so that when and if we have the ability to get the U.N. to convene a tribunal, we can follow through with appropriate action to hold Hussein accountable. Thank you, Mr. Chairman.

STATEMENT OF HON. NANCY PELOSI, A U.S. REPRESENTATIVE FROM CALIFORNIA

Thank you, Mr. Chairmen, for conducting this hearing today. Your interest in and concern for the Gulf environment are important, not only for addressing this issue, but also for avoiding this type of destruction in the future.

Today's hearing is also important because too little is known about the actual environmental devastation to the Gulf War areas and far too little is being done to assess the damage and to restore the environment.

The environmental consequences of the war were predicted well in advance of the first shot fired and many of the statistics have now, sadly, come to life in the largest oil disaster in history—far eclipsing the *Exxon Valdez* which will take decades to repair the environment.

The battle is not over. The extent and longevity of the environmental damage that has been inflicted on the Gulf region will take years to determine. We must mobilize our efforts to mend the environment and to succeed as we would in war.

On April 19, 60 Members of Congress joined me in sending a letter to the President urging his swift action to develop an international plan to cope with the environmental damage to the Gulf region, in accordance with the provisions of the Disaster Emergency Supplemental. Still, there is no comprehensive plan.

A special trust fund was established by the United Nations Environmental Programme where nations could make voluntary contributions to be used specifically for remedial environmental actions in the Gulf region. So far, only a few countries have contributed to the fund and the United States has taken no steps to support or contribute to the fund. The United Nations served as our conduit for "licensing" the Gulf War and could as easily serve to channel the environmental actions that are now needed.

The environment must never again be used as a tool of war. Our pursuit of peace must also include a responsibility to learn from the consequences of war, and to be a strong world leader in rejecting ecological warfare.

The world's largest oil spill continues to engulf the sea and to form oil lakes on land. The air is thickened by oil smoke and day is turned to night. If we can mobilize the U.S. Army Corps of Engineers to rebuild Kuwait, surely we can mobilize our resources for environmental restoration.

Thank you, Mr. Chairmen, for the work of your subcommittees to assess and address the environmental damage to the Gulf region and for conducting this hearing today.

Mr. HERTEL. Thank you. We will begin with our first panel who has been waiting patiently. I appreciate that very much. Dr. Sylvia Earle, Chief Scientist for NOAA accompanied by Dr. John Robinson, Director, Gulf Program Office for NOAA; Captain William Holt, Chief Office of Marine Environmental Protection, U.S. Coast Guard; Captain Donald Jensen, Commanding Officer, National Strike Force Command Center, U.S. Coast Guard; Mr. David Colson, Deputy Assistant Secretary for Oceans and Fisheries Affairs, U.S. Department of State. Dr. Earle, if you could begin?

STATEMENT OF DR. SYLVIA A. EARLE, CHIEF SCIENTIST, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE; ACCOMPANIED BY DR. JOHN ROBINSON, DIRECTOR, GULF PROGRAM OFFICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

STATEMENT OF DR. SYLVIA EARLE

Dr. EARLE. Thank you, Mr. Chairman and Mr. Co-Chairman and committee Members. It is an honor to be here this morning to provide information concerning the role of the National Oceanic and Atmospheric Administration in the Persian Gulf with respect to the environmental consequences of Iraq actions during the war against Kuwait.

We recognize and appreciate that we have participated in two wars; first, lending technical support to coalition forces fighting Saddam Hussein during the aggressive action against Kuwait and neighboring states, and, second and most relevant here, responding to the war on the region's air, land, and sea.

Twenty-five NOAA men and women were activated by their military reserve units and served directly during Operation DESERT SHIELD and DESERT STORM. An additional 25 have spent varying lengths of time on-site during follow-up actions with special reference to the atmospheric problems caused by the oil fires and the consequences of the largest oil spill in history.

All of NOAA's five line offices have contributed to this country's involvement. Starting with the Coast and Geodetic Survey working with the Defense Mapping Agency, more than 600,000 copies of maps were produced in less than three months for use by ground combat forces. NOAA's HAZMAT team, members of the NOAA Corps and of NOAA's atmospheric research labs, were involved early on to model and predict the behavior of the plume generated by the fires and the trajectory and fate of the massive spill.

The National Weather Service worked with Saudi Arabia's Meteorological and Environmental Agency to provide allied forces with critical weather data. NOAA's National Environmental Satellite, Data and Information Service accomplished a fine juggling act maintaining routine operational requirements while responding to an increased demand for satellite coverage of the Persian Gulf region.

The National Marine and Fisheries Service organized a team of specialists to help respond to critical questions that came up about seafood safety. Various parts of the Oceanic and Atmospheric Research Division of NOAA became involved in the thick of research on both the fires and the spills.

Mr. Chairman, I have prepared a statement that I would like to have entered into the record that more fully details NOAA's activity before, during, and after the war, but I would like, if possible, to shift now to illustrate some of the action with slides. (We may wish to lower the lights a bit to better take advantage of the images here. We need to center it just a little bit please. And is it possible to reduce the lights slightly to get a better reading here?)

To the arid countries bordering the Persian Gulf, this nearly inland sea serves in many respects as the area's rain forest. It is shallow, with an average depth of less than 100 feet and, thus, light penetrates to the bottom. Plants, both small planktonic plants and luxuriant beds of sea grasses, generate oxygen, absorb carbon dioxide, and produce food for an enormously rich and diverse assemblage of fish, eight species of shrimp, turtles, and even a small but thriving population of sea cows.

In many respects, it resembles the Gulf of Mexico and the in-shore areas along the Florida Keys. For example, coral reefs flourish in parts of the Persian Gulf as well as our Gulf despite unusually high salinity and water temperatures that range well above the 80's to lows in the 50's (Fahrenheit). This corresponds to highs in the 30's centigrade to less than 15 ° centigrade during the winter months in the Persian Gulf.

As in coastal areas off Texas, Louisiana, Mississippi, Alabama, Florida, and even Georgia, the Carolinas, and Virginia, there are extensive undersea meadows of sea grasses. In addition, these are low marine forests along the shore, marshes and mangroves, that have sustained a rich fishery with several species of the shrimp, lobsters, pearl oysters, and numerous kinds of fish. Studies initiated within the past two decades confirm the enormous wealth of small, medium, and large creatures that provide food, not just for human beings but also for more than a billion migrating birds that travel through the area up from Africa to Eurasia in the spring and returning about now in the other direction.

The shallow, productive waters of the Florida Keys, shown here, have more than a passing resemblance to Persian Gulf reefs and sand flats. There are many families of fish and crabs and other creatures that are shared in the two areas. Those of you familiar with estuaries and marshes in the United States would feel right at home among the marshes in that other Gulf.

This region was formed at the confluence of the Tigris and Euphrates Rivers about 10,000 years ago as the last Ice Age faded. Glaciers melted and sea level rose. It was then that the Gulf was formed by water flowing in from the Indian Ocean, at a time coincident with the rapid expansion of human kind. It is thus known as the cradle of human civilization. That cradle was rocked with a heavy hand during the past year when 785 oil wells were damaged and 613 set afire, of which 87 are still burning. Eighty-seven oil wells on fire in one small location seems like a lot, and it is a lot, but it represents phenomenal progress since June when more than 500 were still flaming, or even August when there were more than 300 still on fire generating an unprecedented man-made plume of smoke, shown here, that extended a distance comparable to one encompassing most of the eastern seaboard of the United States.

Early on, it was apparent that concerns about a possible nuclear winter effect were unlikely. Only small amounts of the plume may have reached into the stratosphere, and thus were not carried globally, unlike the matter that was thrust skyward by Mount Pinatubo; rather, the plume stayed mostly below 20,000 feet, hovering generally around 15,000 feet. It is shown here as viewed through the port of the 747 on which I traveled with Secretary Robert Mosbacher and a group of U.S. businessmen and congressmen to Kuwait to see if help could be provided to rebuild Kuwait's shattered economy.

Neither global cooling nor perhaps global warming are much influenced by Kuwait fires, but that doesn't mean, therefore, "no problem." The businessmen traveling with Secretary Mosbacher were quick to recognize that a sound economy depends on a sound environment. As one remarked viewing this nighttime sky, "First, you have to be able to breathe the air." This image was taken at 2 o'clock in the afternoon. Literally, for a time, midday merged with midnight.

The first priority for everyone initially, of course, was getting the fires out. It is easy to be inspired by scenes such as these. Putting out the fires is not NOAA's line of business, but tracking the plume through satellites, modeling prediction, and, of course, cooperation with other agencies to gather and dispense information, that is NOAA's business.

Happily, the fires, many of them, and, thus, the plume should be terminated by the end of the year and possibly significantly sooner. For U.S. firefighters, there may be cause for a happier-than-usual Thanksgiving this year. Standing here is Dr. Will Pendergrast, one of several NOAA personnel assigned for liaison to the U.S. embassies in Kuwait, Saudi Arabia, and Bahrain during the past year. Will has spent most of the last year, in fact, in Kuwait as the environmental advisor to the U.S. Ambassador in Kuwait, Skip Gnehme.

Many have asked what is the United States doing over in the Gulf now that the war is over, and why aren't the Kuwaitis doing more for themselves? Well, in fact, they are doing a great deal. Recovery is underway on many fronts, but consider that Kuwait's prestigious scientific research institute located in Kuwait City employing some 1,200 people before the war was looted and then thoroughly vandalized as was the university in Kuwait City. The National Museum, Kuwait's equivalent to our Smithsonian Institution, was also looted and then vandalized; its libraries were burned; and its works of art destroyed. Perhaps someone could explain the military advantage in torching the planetarium.

Restoring the weather service to some kind of operation was one of NOAA's first priorities. This is the office of the Kuwait counterpart of NOAA's U.S. Weather Service director, Joe Friday. You are seeing here the office of the head of their weather service as I saw it during my fourth visit to Kuwait in August.

Eighteen meteorological towers were installed by NOAA personnel early on working with individuals from Kuwait. These made it possible to measure wind, temperature, relative humidity, and so on. NOAA has left these in place as a gift to Kuwait. Our gift in return, of course, is important information for that part of the

world where for a while there was a gap. Even without a desk, it is possible to launch weather balloons.

Perhaps one of NOAA's most significant contributions was its role in helping to organize international atmospheric research through the United Nations agency, the World Meteorological Organization. It really was important because Germany, the United Kingdom, and several U.S. agencies wanted to send planes to the area and gather data, and for a while it appeared that all of them would arrive at about the same time, leaving great gaps without any planes to gather vital information about the plume.

NOAA co-chaired with the UK a turning-point meeting in Geneva in April, with more than 50 representatives from 15 countries who have subsequently worked together to gather and disseminate data.

The counterpart for research on the oil spill occurred during a meeting in June, followed by a meeting in September of the Intergovernmental Oceanographic Commission, another U.N. agency, where, again, a plan for cooperation was brought to the table by NOAA initiative. Dr. John Knauss is the First Vice Chairman of the IOC, and NOAA is the permanent representative both to IOC and the World Meteorological Organization for the United States.

We have heard already that some six to eight million barrels of oil were deliberately set loose in the Gulf by the Iraqis, an amount we estimate to be some 32 times that of the well-known Prince William Sound spill of 1989. The consequences were devastating. First priority was given by the Saudis, and quite understandably so, to protection for their water facilities, the desalination plants. These had, of course, strategic importance to the outcome of the war and the follow-up. And, thus, delays were experienced for efforts coping with the massive amount of oil that influenced other aspects that are of value to that part of the world: the beaches; and the marshes that were simply swamped—inundated with enormous quantities of oil.

This slide shows a view of some of the tidal flats. There are vast areas because of the shallowness of the Gulf that were smothered by the oil. Productive marshes and mangrove areas, such as these, were turned into blackened areas, such as this, as was the shoreline. The Coast Guard was the lead agency from the United States for responding to the spill in terms of monitoring and advising on protocols for action. Tens of thousands of resident and migratory birds were affected by this spill. NOAA "HAZMAT" personnel, who were experienced from encounters with many previous spills elsewhere, were dispatched to the scene and some, such as Jay Rodstein, were there for many weeks.

About half of the oil is thought to have evaporated into the atmosphere. More than a million barrels, at least four times the Prince William Sound's spill, were moved into huge pits carved out of the desert. Maybe the actual amount was closer to two million barrels. Whatever it was, it was an unprecedented recovery action, and, of course, most of this still remains in these holding pits.

One thing is sure, a lot of oil was left to slide along the coast of Saudi Arabia. It probably would have extended all the way to the Indian Ocean but for a small quirk in the geography of Saudi Arabia. That little hook of land, that you see midway down that

map, that projects out into the Gulf, and that is joined to the mainland shore by a solid man-made causeway, has served to stop the oil as it progressed down the coast. It, thus, was concentrated along the shoreline north of Abu Ali, the name of that little hook of land.

The causeway shielded southern waters from the oily tide. This is the northern side of the causeway where many small creatures became instant fossils. The beach was like a highway paved with asphalt. Imagine yourself a turtle trying to find a nice, soft place to deposit your eggs in a beach like this. The hard asphalt is evidence that this is not the first spill, and it is likely not to be the last one in this part of the world.

Some of us got the bright idea to see what it was like from the standpoint of the fish and so organized what we called Operation Desert Dive. We went last April with follow-up observations in August, and had an opportunity to see what it was like under the surface. We found big blobs of oil shown here in a weathered state.

It was easy to see why concerns were raised about seafood safety. During a dinner meeting in Bahrain last March, the Prime Minister said that his mother liked to eat fresh fish every day. He wanted to know, "Is it safe?" In response, NOAA organized specialists to go to Bahrain, Saudi Arabia, and Kuwait to advise on protocols to find out about seafood safety issues.

In addition to the oil spill everybody hears about, there is another; the oil spill from the sky reflected here in soot washing ashore near Kuwait City. Anyone could make an educated guesstimate about the oily fallout from the sky generated by three to six million barrels a day going up in smoke except for a varying amount of uncombusted oil, perhaps as much as 10 percent that forms a mist carried by the wind for sometimes 60 miles, perhaps more, before raining out on you if you are under the path or on the desert. Here is a picture of the desert that is black, showing the tracks of vehicles going through the middle of it, thus revealing the white sand below.

Some wells are not on fire, and they jet raw oil as a mist skyward—100 percent uncombusted. Perhaps you have heard about the lakes of oil flowing over Kuwait deserts like black satin, deadly black satin, as viewed here during a flight in a Blackhawk helicopter in August. They really resemble lakes, and certainly are convincing to many birds who mistake this for water. These small oceans of oil are deceptive and have been trapping thousands of insects and birds. Sometimes a chain reaction of would-be feeding activity occurs as an insect attracts a bird who in turn attracts a mammal, and it becomes like a La Brea tar pit scene.

The good news is that life is resilient. Recovery is underway as small creatures accomplish the hard work of survival against the odds in parallel with the people of Kuwait who are slowly rebuilding their lives and their culture. The system in time will recover with or without human help, but there is no question that it will take a long time, and there is no question that when the pieces are put back together again, the place will be forever changed, forever bearing the mark of these troubled times.

Of course, there are some constructive things that can be and should be done to help the recovery. But as was so painfully learned in Prince William Sound, sometimes it is important not to

go too far. Bulldozed marshes in Brittany have not recovered after 15 years. The steam cleaning of the rocks in Prince William Sound appears perhaps to have been counterproductive. Positive action to protect remaining healthy areas as a source of recovery and restoration is mandated, however, and it is encouraging that efforts are underway to protect parts of the Gulf that remain relatively undisturbed in part in recognition of this need.

Dr. Knauss, the Administrator of NOAA, remarked last spring, "We must learn from this terrible experiment. Never would we deliberately put so much smoke and carbon dioxide and other pollutants into the atmosphere or into the sea or onto the land, but given that it is there, there is much to be gained; insight about global warming, about human impact on climate and global change, about our ability to set things right when things have gone wrong." This sentiment was reinforced by Bill Reilly, the Administrator of the EPA; in the U.S., the lead agency for Gulf response. He told Kuwaiti reporters last June, "The greatest tragedy would be if we do not learn from this." So here is the laboratory and the challenge.

NOAA is presently developing research plans in collaboration with other U.S. agencies and, of course, the scientific community in the countries of the Persian Gulf. With a little luck and a lot of hard work, perhaps allies in winning the Persian Gulf War will succeed in due course in making peace with the environment.

Mr. Chairman, I am pleased that John Robinson, head of NOAA's Gulf Response Team, is here and with me and would be pleased to respond to questions. Thank you.

[The prepared statement of Dr. Earle can be found at the end of the hearing.]

Mr. HERTEL. Thank you, Dr. Earle. We have a lot of questions, but I think we will defer the custom until the panel is finished. Captain Holt.

STATEMENT OF CAPTAIN WILLIAM F. HOLT, CHIEF, OFFICE OF MARINE ENVIRONMENTAL PROTECTION, U.S. COAST GUARD

Captain HOLT. Thank you, Mr. Chairman. With your permission, sir, I will summarize my statement that has already been submitted for the record. I am Captain William Holt. I am Chief of the Coast Guard's Marine Environmental Protection Division here in Coast Guard Headquarters in Washington. It is my pleasure to appear before you today to discuss the United States Coast Guard's involvement in response to the catastrophic oil discharge in the Persian Gulf.

You are all well aware of the role the Coast Guard has played in oil discharge response activities in the United States, but the Coast Guard has also been active in the international community as well. It is through the Coast Guard's commitment to marine environmental protection that we have achieved a leadership role in the world community and have become a focal point for technical expertise and operational assistance.

My purpose today is to briefly outline how the Coast Guard was brought onto the international scene for this particular oil discharge response effort and to explain some of the actions taken by the Coast Guard and other agencies in the United States and

abroad to support the oil pollution response mission in the Gulf region.

In January, Iraqi forces began discharging oil from fixed facilities and vessels in what was an apparent attempt to disrupt any potential amphibious landing of coalition forces in an act that has been characterized as ecoterrorism.⁴ Early estimates of the amount of oil that actually entered the Gulf ranged from 130 to 460 million gallons. We will, however, never be able to verify how much oil was actually discharged, but our best estimate is that the Gulf discharge was probably about 20 times that of the *Exxon Valdez*.

On January 24, 1991, the Saudi Arabian government formally requested technical assistance from the United States through the U.S. Ambassador to Saudi Arabia. As you know, the Coast Guard is charged with oil discharge response in the marine environment within the United States, and the President, therefore, appointed the Coast Guard as the lead agency for the Federal Government for this emergency response effort.

A team of pollution experts led by the Coast Guard and comprising representatives of the Environmental Protection Agency, National Oceanic and Atmospheric Administration (NOAA), and the U.S. Army Corps of Engineers was quickly formed from around the country and dispatched to the Gulf. Additional agencies joined the team on subsequent deployments, including the Department of Energy and the Department of the Interior. These and other agencies of the National Response Team provided continuous support and coordination to the team of representatives who were deployed in the Gulf.

Because of the mission and the composition of this team, it was named the U.S. Interagency Assessment Team, or USIAT. Efforts to coordinate activities among the various agencies here at home were exemplified by NOAA's establishment of a special discharge assessment center at Coast Guard Headquarters, to support the USIAT which was operating halfway around the world.

Despite the constant threat of Scud missile attacks and surface warfare action, the members of the United States Interagency Assessment Team went into harm's way and performed in a superlative fashion. I think it is important to emphasize that this was not an ordinary response effort. The size of the release alone made it unique, but adding literal combat conditions made for a situation so difficult to comprehend that I feel we owe a tremendous debt of gratitude to everyone who went to the Gulf to help with this effort.

Because of our ability to marshal a team of experts so quickly, many of the initial offers of assistance from around the world were directed to the United States Coast Guard. We in turn referred these offers to a U.S. representative working out of the U.S. Embassy in Saudi Arabia. As the magnitude of the discharge became known internationally, more countries offered assistance, and eventually the International Maritime Organization, or IMO, formally assumed the role of clearinghouse—matching Saudi needs with offers of assistance. The IMO, as you know, is a specialized United Nations organization that addresses international issues regarding shipping and the marine environment.

This last November 1990, IMO member states negotiated the International Convention on Oil Pollution Preparedness, Response,

and Cooperation (OPRC). And as you may know, that OPRC was an initiative of President Bush during the 1989 Paris Economic Summit. And, the Coast Guard, working with the State Department, succeeded in negotiating that convention for the United States. I might add that last week the Senate Foreign Relations Committee approved the OPRC and voted to send it to the full Senate for advice and consent.

The Gulf oil discharge was the first opportunity for some provisions of the OPRC to be placed into effect even though the convention is not yet in force. Specifically, the concept of IMO as an international center or clearinghouse for response equipment, experts, and information, and the use of IMO to coordinate international support during a response, were used effectively in the Gulf.

As more support arrived from around the world, the USIAT gradually became known as the International Interagency Assessment Team under the cognizance of an IMO pollution expert. And the efforts of the IMO served as a basis for other U.N. organizations to participate in the Gulf crisis. The Coast Guard through the entire evolution remained in charge of the American contingent.

As you know, Mr. Chairman, the inventory of Coast Guard general purpose oil pollution response equipment is modest at best. We do, however, have specialized equipment that is particularly suited to our command and control mission. In addition to the technical expertise that we provided, when the Saudis requested it, we dispatched our HU-25 Falcon jet aircraft, equipped with the oil surveillance equipment called AIREYE, to assist them in tracking the movement of the oil in the Gulf.

Even though the last USIAT representatives departed the region on the 31st of July of this year, we have continued to monitor the situation in the Gulf and through a Coast Guard officer attached to IMO, have remained active in IMO's activities. In addition to its other duties, IMO has also been managing a special trust fund that was established by the Secretary General to support cleanup efforts and to mitigate adverse environmental impacts. With this money, currently about six million dollars, IMO has facilitated the deployment of oil cleanup equipment and continues to carry out removal projects in environmentally sensitive areas.

This was truly a U.S. interagency and an international response effort with the U.S. in the vanguard of assistance at a level commensurate with our capabilities. This concludes my statement, Mr. Chairman. I will be happy to answer any questions that you might have.

Mr. TAUZIN. Captain Holt, before you move on and before we take any witnesses, your statement says that the release of oil was 30 times that of the *Exxon Valdez*. I think in your oral testimony you said 20.

Captain HOLT. Yes, sir. It ranged actually from 10 to 30 times. I actually tried to split the difference.

Mr. TAUZIN. But to emphasize it again, 20 times—

Captain HOLT. Yes, sir.

Mr. TAUZIN [continuing]. The *Exxon Valdez*?

Captain HOLT. Yes, sir. Again, we can't know the precise amount of oil that was discharged, but that is the general range that we are talking about.

Mr. HERTEL. Captain Jensen.

STATEMENT OF DONALD JENSEN, COMMANDING OFFICER, NATIONAL STRIKE FORCE COMMAND CENTER, U.S. COAST GUARD

Captain JENSEN. Good morning, Chairmen and distinguished Members of the subcommittees. I am Captain Donald S. Jensen, Commanding Officer of the National Strike Force Coordination Center in Elizabeth City, North Carolina. Captain Holt has already outlined the overall assistance provided to the government of Saudi Arabia by the United States Coast Guard in response to the Gulf oil discharge. I will briefly review my role and observations as Chief of the United States Interagency Assessment Team, dispatched by President Bush on January 27, 1991.

The team's mission was to assess the magnitude and impact of the discharge on Saudi Arabia and to advise, recommend, and train Saudi government representatives in appropriate response, strategies, and techniques. The Saudis had developed a national oil discharge contingency plan several years before in the aftermath of a major discharge in 1983-1984. The plan was not signed by King Fahd until three days after this discharge occurred. The plan designated the Meteorological and Environmental Protection Administration or MEPA as the lead Saudi agency and predesignated MEPA's vice president, Dr. Nizar Tawfiq, as the on-site coordinator. The interagency assessment team arrived in Dhahran, Saudi Arabia, just prior to Dr. Tawfiq and his staff and found that a formal, national response organization was not yet in place.

The first concern raised by the team was the need for accurate daily overflight data and a correct position of the slick. Using the United States Navy aircraft, U.S. and Saudi observers started a daily overflight routine. The Saudi observers were quickly trained, and Saudi aircraft eventually took over the surveillance mission. Visual overflight and satellite data were unable to provide oil slick mapping of the entire Gulf so the Saudi government requested that the U.S. Coast Guard provide its AIREYE oil surveillance capability. Once the aircraft were on-scene, excellent side-looking airborne radar surveillance imagery of the slick was provided on a daily basis.

A second major concern was the development and implementation of an organizational structure capable of dealing with a discharge of these proportions. Using a structure developed following the *Exxon Valdez* discharge, the assessment team proposed a structure that formed the basis for the response organization that ultimately evolved.

The lack of adequate funding was an issue from the outset. Dr. Tawfiq, at my recommendation, requested a billion dollars U.S. to initiate an aggressive response effort. Except for approximately two million dollars that was made available shortly after the initial funding request, no other funding was provided during the first 30 days. This confounded efforts to mount an effective response.

Other countries also started sending experts to help the Saudis cope with the discharge. As these experts arrived, they were integrated into the U.S. Interagency Assessment Team organization as advisors. Consequently, the Interagency Assessment Team took on

an international flavor and became known as the International Interagency Assessment Team.

Another important issue was the development of an overall national response strategy. The Interagency Assessment Team recommended and the Saudi government adopted the general response philosophy of: number one, protecting high priority facilities and environmentally-sensitive areas; two, recovering oil offshore in those strategic locations that would minimize shoreline impact; and, three, removing oil in shoreline areas to prevent it from moving down the coast. A national priority list of facilities and environmentally-sensitive areas was established, and the limited equipment in-country was moved to the highest priority areas.

As mentioned by Captain Holt, the Interagency Assessment Team coordinated with IMO in establishing a clearinghouse in London to screen and categorize offers of assistance that poured in from governments around the world. As MEPA began to initiate their response action, a patchwork of resources was pieced together from the limited in-country sources, foreign governments, and United States companies in Saudi Arabia.

As the slick moved southward, the lower Gulf states became increasingly concerned about the potential impact on them, and based on this concern, team members were sent to Bahrain, Qatar, and the United Arab Emirates, and assisted them in their preparations.

Initial team members were relieved by a second team on February 26. The first team members left Saudi Arabia with a feeling of frustration that all recommendations had not been implemented. However, we were satisfied that we had made a positive contribution in helping the Saudis make effective use of their limited monetary, personnel, and equipment resources to mount a response effort consistent with their national priorities.

Thank you for this opportunity to speak before the subcommittees, and I will be happy to respond to any questions that you may have.

[The prepared statements of Captain Holt and Captain Jensen can be found at the end of the hearing.]

Mr. HERTEL. Thank you, Captain. And our last witness on the panel will be Mr. David Colson who is with the State Department.

STATEMENT OF DAVID COLSON, DEPUTY ASSISTANT SECRETARY FOR OCEANS AND FISHERIES AFFAIRS, U.S. DEPARTMENT OF STATE

Mr. COLSON. Thank you, Mr. Chairman. With your permission, I will summarize my testimony. First, I would simply like to note that the operations that United States agencies undertook in the Gulf really fell under an international umbrella. In the first instance, it was pursuant to a request from the Saudi government, and in the second instance, we have been operating under the auspices of international organizations, in particular, IMO, UNEP, the World Health Organization, and the World Meteorological Organization.

The second basic point is that the State Department's role in all of this, basically, was one of logistical support to other agencies of

the Government that had the expertise and that we needed to help to get them on the ground. And so our effort was, basically, one of coordination and facilitation.

I would like to associate myself with the remarks of Captain Holt in respect of the role of IMO in coordinating the international effort to coordinate the offers of assistance and to identify the needs for assistance in dealing with the oil discharge. IMO has set up a six million dollar trust fund through which certain cleanup activities are being funded. I would also like, as well, to emphasize the importance of the Oil Pollution Preparedness Response Convention that had been just previously negotiated. That was an outgrowth of the concern of the United States expressed by President Bush at the G-7 Summit in Paris in 1989 that catastrophic oil spills were something that one country alone could not deal with, and it was very important to develop an international convention that would bring the international community and the assets of the international community together in order to help manage and deal with these enormous problems. After that initiative at the economic summit, the IMO got to work, largely with the Coast Guard's leadership, to develop a convention that was signed in November 1990. And even though the convention was not in force, the international community really operated as if it was in force. This was one of those times where I think we were a bit in front of the curve.

The final point I would make, Mr. Chairman, relates to the issues of compensation that were raised at the start of this hearing. As was mentioned, United Nations Resolution 687 sets up a mechanism for compensation, and the Resolution, as, again, somebody noted, makes it very clear that Iraq is legally responsible for the damages inflicted during the war. And the Resolution is clear on its face that this liability includes environmental damages and the depletion of natural resources. The compensation fund has been set up. There is as yet no money in it. A team of experts from the 15 Security Council nations are meeting even as we speak in Geneva to set up the various technical rules that would be associated with the establishment of such a fund and the standards for making claims against the fund.

As I believe Congressman Young mentioned, the Security Council has authorized Iraq to sell up to \$1.6 billion worth of oil for humanitarian purposes, and the conditions of the resolution are that 30 percent of that sale would go into this fund and be available for claimants. So if Iraq were prepared to sell oil under these conditions, up to \$480 million would be put into the fund to pay claimants. These procedures are being worked out even as we speak. Procedures for individual claimants have, basically, been decided, and now the Commission is taking up the question of how do governments or how do businesses make claims against the fund.

As many of you are lawyers, I am sure that you can understand this is a fairly complicated, technical legal process. We have got to get the process established before the fund can really begin to operate. Thank you very much, Mr. Chairman. I would be happy to respond to any questions.

[The prepared statement of Mr. Colson can be found at the end of the hearing.]

Mr. HERTEL. Thank you very much. First, I want to point out that we have NOAA and the Coast Guard before us on this panel, two Government agencies that were cut drastically over the last eight years. But I want to say that it was a bipartisan effort by this committee that made sure that the agencies weren't decimated, and the importance of what you are doing and what you have done and what you are telling us today proves the people on this committee were right in not going along with the Administration's deeper cuts during this last decade. It is important to the people of our country.

First, Dr. Earle, I would ask you to tell us more—in your testimony you indicated that we have been aiding Kuwait since 1983 regarding environmental damage from oil spills. Were any lessons learned from the earlier experience that they had with their Iran-Iraq War that were helpful this past year in your working there?

Dr. EARLE. The experience gained in spills over many years have certainly been useful in terms of being able to respond currently, but so much more remains to be developed especially given the size of this one. There is no precedent for the amount of oil concentrated in a relatively small area. So while the past is useful in the experiences gained especially in terms of the early monitoring and the modeling work, the follow-up now is more an opportunity to really learn for future applications.

Mr. HERTEL. Dr. Colson, can you break down a little bit more for us because you were talking about the cost and what recourses we have and so forth, but can you give us some dollar amounts from what has been contributed from other countries, what we have been spending, what these agencies are spending as far as dollar figures? I don't want specifics but kind of an idea of what has been contributed from us, agencies, and other countries.

Mr. COLSON. Congressman, I don't have the information about what U.S. Government agencies have spent on this. I believe that is included in a report to Congress that is right now going through final OMB clearance, and there is quite a lot of detail about the resources that U.S. Government agencies have expended. I can say that in the international community the six million dollar trust fund, the trust fund that IMO set up, which had about six million dollars in it came from contributions from the United Kingdom, Japan, Canada, Luxembourg, Switzerland, the Netherlands, and the European Community. As well Japan contributed one million dollars into a trust fund that the United Nations Environmental Program set up.

Mr. HERTEL. I have two short questions, and then Mr. Tauzin is going to take over. Dr. Earle, please respond to the allegations that environmental data critical to the oil spill and oil well fires response was withheld by the U.S. Government. Can you respond to that allegation?

Dr. EARLE. Perhaps early on soon after the end of the war when troops were still there and so on, there was some sensitivity. But certainly there is nothing currently being withheld in terms of information within our agency.

Mr. HERTEL. And I must ask this question. As a woman scientist operating in Kuwait and that region, how have you been treated? Have you been treated as you should be properly with the govern-

ment people you work with, with scientists, and with the public there?

Dr. EARLE. The cultures, of course, are very different, and their attitudes about women are very different. And this was experienced by our military, and we are all familiar with some of the stories that came out of that. But I must say that I was always treated with respect and professionally in the four times that I have been there, and that was also true, I believe, with Commander Francesca Culva from the NOAA Corps who accompanied me on two of the trips, that we didn't try to drive automobiles, for example, but we did some things that were a little unusual such as to go diving and to gain access to places that perhaps are not considered to be traditional for the women in Saudi Arabia and in Kuwait. But I think this in part was the fact that we were there as professionals, that we dealt with the scientific community. With us today is, in fact, Dr. Evram Alam who is with King Fahd University in Saudi Arabia who accompanied us in the field on a number of our efforts to discover what was happening. And all I can say is that at least from my standpoint I found great cooperation and respect and as a scientist and as a woman.

Mr. HERTEL. Thank you.

Mr. BATEMAN. Would the Chairman yield?

Mr. HERTEL. Yes.

Mr. BATEMAN. You made reference to allegations that our Government withheld information earlier on. I have seen that in our briefing book. I am curious as to the source of the allegation because I would like to pursue that as we proceed.

Mr. HERTEL. I think there was some misunderstanding, but maybe Dr. Earle could tell us that the lines of communications have been complete and what the allegations—

Dr. EARLE. Perhaps it would be appropriate to ask John Robinson who has been head of the Gulf Response Team to take a crack at that.

Mr. ROBINSON. I will try. I think during the actual hostilities, information was withheld such as satellite photography and meteorological information, the exact identity of the people who were going over there during the time that we had hostilities going on. After the hostilities ceased, there was not any further effort by the United States to withhold information, but, unfortunately, the perception remained, I think, in many people's minds that we were continuing to withhold information. There may have been a short gap shortly after the war before we got the final clearance, and perhaps, Biff, you can correct me if I am wrong here, but there may have been a short gap after the war before we got our clearance to go ahead and deal normally with the information.

I might add I believe Representative Weldon asked about whether we were documenting the evidence well enough to be able to put this case together later perhaps, and I might add that the National Center for Atmospheric Research is very carefully putting together all the data that was obtained from the fires. That information will be publicly available to anyone who requests it, and they will have a complete history of all the information that was gained from the ground, from the air, and from space. And that will be made available generally.

Mr. HERTEL. Mr. Tauzin.

Mr. TAUZIN. We only have about 10 minutes to go before the vote, and I think it would probably be best if we just took a recess at this time. When we come back, I will want to get into the Coast Guard's ongoing activities with IMO and the questions of funding and how, in fact, we are going to be able to fund this effort. And, Dr. Robinson, I am going to also ask you to elaborate a little more on these inshore impacts so we get a full understanding of how bad this spill is. We will stand in recess until this vote is over.

[RECESS]

Mr. HERTEL. We will call the hearing back to order. Because we are going to be having votes every 15 minutes, we will get right to the questions. Congressman Tauzin.

Mr. TAUZIN. Let me first thank all of you for appearing today and for participating in the hearing. Let me get to the heart of the matter quickly. The concern that I think both Chairman Hertel and I have as we begin these hearings Captain Holt, is that we are looking at evidence of a spill on the magnitude of, as you said, 20 times the size of the *Exxon Valdez*. The spill in the Prince William Sound had so much money spent, so much cleanup effort conducted because it had so much media attention. And yet in the Gulf of Arabia with a spill at least 20 times as bad, we are looking at a situation where today, so many months after this spill, so little has been done.

I think we probably should first hear from Dr. Robinson with a little more elaboration on the inshore damage being done. My understanding is that there is no more cleanup of oil in the water because oil in the water is now, basically, removed?

Mr. ROBINSON. That is correct.

Mr. TAUZIN. The damage is now on the shore?

Mr. ROBINSON. That is right.

Mr. TAUZIN. And it would be helpful, I think, as we begin to tackle what can we do and where do we go for help, to understand the magnitude of the damage inshore. Dr. Robinson, if you could elaborate just quickly for us.

Mr. ROBINSON. OK. I will. There is about 450 miles of shoreline that has been impacted, and in quite a bit different situation than we had in Alaska. The shoreline has been continuously impacted along that entire length. In Alaska, we had many, many niches of unimpacted land in between the areas that were hit by the spill, and we believe now that those niches of land that were not affected became very important later on in recolonizing the areas that were affected as time went on. We don't have that case in Saudi Arabia. We have just a virtually continuous impact along hundreds of miles of coastline. I think probably the most severe damage has been done to the marsh and mangrove areas. There were areas there that supported—

Mr. TAUZIN. If I could interrupt just a second. The mangroves as I understand are native and are a very rare vegetation. I understand from the evidence I got from the Veco pictures is that they are either dead or dying unless something happens.

Mr. ROBINSON. Yes. I think the mangroves may probably be beyond any recovery at this point. They haven't totally died yet, but mangroves are kind of slow in, you know, totally feeling the effects of a spill like this, but it doesn't look like probably much can be done there.

As Sylvia Earle pointed out in her talk, the species along the shoreline and in the Arabian Gulf live kind of on the brink anyway most of the time. The temperature ranges are extreme, the salinity is very high, and the mangroves there, for example, are dwarf mangroves compared to those that we have in the Southeast. So they are really on the edge most of the time. Most of the animals there live on the edge, and dealing with the spill was just——

Mr. TAUZIN. Also, the team learned that the Kuwait shrimp fisheries has been completely eliminated.

Mr. ROBINSON. Well, we are not sure about that. The shrimp fisheries was eliminated because the fishermen aren't fishing there anymore and mines were more of a problem in the devastation of the industry. There hasn't been any——

Mr. TAUZIN. Dr. Earle's written testimony says that it was eliminated due to loss of boats, gear, physical oiling, and concern for indeed mines and military ordnance.

Mr. ROBINSON. Yes.

Mr. TAUZIN. But there was apparently a great damage to the fisheries, right?

Mr. ROBINSON. Again, I don't think we know. That would be one of the major research topics that we would like to undertake to find out exactly how much damage has been done to the fisheries, especially the shrimp fishery.

Mr. TAUZIN. 10,000 seabirds were killed. Is that right?

Mr. ROBINSON. Yes. I would say at least. I mean——

Mr. TAUZIN. And major shrimp fisheries off the northern Saudi coast were also voluntarily closed at least for a time. Is that right?

Mr. ROBINSON. Yes. That is true.

Mr. TAUZIN. And there is scant evidence right now as to long-term damage to those fisheries. Is that right?

Mr. ROBINSON. That is true.

Mr. TAUZIN. Let me then turn quickly to the question of what can we do and where do we go? First of all, before we get to the State Department, Captain Holt, I am shocked as I read your testimony that we, in fact, made a request at the onset to Dr. Tawfiq for a one billion dollar initial response and that what we got instead was a two million dollar effort. To whom was that one billion dollar request directed? Captain Jensen, perhaps you can answer it.

Captain JENSEN. Dr. Tawfiq directed that to the Ministry of Finance.

Mr. TAUZIN. Of where? To the Ministry of Finance of what?

Captain JENSEN. Of Saudi Arabia.

Mr. TAUZIN. Saudi Arabia. So the request was made from Dr. Tawfiq to the Saudi Arabian government indicating that a billion dollar response was needed immediately to answer this awful spill, and what you got was two million dollars. Is that right?

Captain JENSEN. Yes, sir, and even that was slow in coming.

Mr. TAUZIN. And, secondly, that after this two million dollars slow in coming was finally provided, the only other funds available

is this meager six million dollar fund that has been set up by the International Maritime Organization. Is that correct?

Captain JENSEN. Yes, sir. That is my understanding.

Mr. TAUZIN. Are there any other moneys set aside anywhere to address what looks like to be a multibillion dollar mess? Captain Holt?

Captain HOLT. Congressman, I don't have any indication that there were other sources of money made available other than what IMO put together and the money that was made available from the Ministry of Finance. But, again, we just don't have the detailed intelligence as to whether or not the Saudi government had made extra money available.

Mr. TAUZIN. Let me not be misunderstood. As I said on the floor yesterday, the Saudis and the Kuwaitis are not the aggressors here. They were the victims of this awful act of ecoterrorism. But, I am trying to get in place the dollars. As far as we know, two million was provided by the Saudis in answer to a one billion dollar request, and six million dollars was provided in the international fund. And outside of that, no other moneys have been made available for this cleanup which has, basically, gone unresolved all these months. Is that summary correct?

Captain HOLT. Yes, sir. No money per se, but there was a transfer of equipment and an enormous amount of support provided by a variety of countries in terms of personnel and equipment to help.

Mr. TAUZIN. That was picking up oil on the water?

Captain HOLT. Yes, sir.

Mr. TAUZIN. But nothing has been provided for cleanup of the in-shore damage that Dr. Robinson described and Dr. Earle has described in her report. Is that correct?

Captain HOLT. Not that I am aware of, sir.

Mr. TAUZIN. Let me ask State. In reference to this possibility of the sale of Iraqi oil and the dedication of you said 30 percent of the revenues from this \$1.6 billion which may be authorized in sales, where does that money go and for what may it be used? You said to satisfy some claims. Theoretically, could the Saudis claim that money to be used for a Gulf of Arabia cleanup effort? Or is that money going to go into litigation from oil companies and other people interested in securing a part of it for their own purposes?

Mr. COLSON. Congressman, the Security Council in Resolution 687 determined that Iraq was liable under international law for any direct damage inflicted including environmental damage as an outgrowth of the war. They set up a fund to be administered by the Secretary General. The moneys going into that fund will be primarily a percentage of Iraqi oil revenue—

Mr. TAUZIN. Thirty percent you indicated?

Mr. COLSON. In respect of that \$1.6 billion sale that has now been authorized by the Security Council. If we got past all of this and if the sanctions presently on Iraq were removed, there would be a different determination by the Secretary General and the Security Council as to the percentage. Thirty—

Mr. TAUZIN. What does that mean in layman's terms? How much are they obligated to pay out of their revenues if they sell any oil today? How much could we extract from them if the United Nations really got tough?

Mr. COLSON. The U.N. Security Council set up a fund into which all Iraqi oil revenue will be paid. Up to 30 percent of this fund will be available to pay damage claims. The only sale that has been authorized is this \$1.6 billion sale for humanitarian purposes—

Mr. TAUZIN. That doesn't include though—

Mr. COLSON [continuing]. And for that—

Mr. TAUZIN [continuing]. A dime for cleanup?

Mr. COLSON. What?

Mr. TAUZIN. That doesn't include a dime for cleanup.

Mr. COLSON. It was determined that 30 percent of that \$1.6 billion would be available to pay damage claims. Now, claims will be made against that fund by individuals, by businesses, and by governments. And while I would be confident that \$480 million would not cover all of the claims that governments and people in businesses would make against Iraq for damages, it is possible that environmental claims could be made in that connection.

Mr. TAUZIN. All right. Well, let us not fuzz it up. What we are talking about is that the United Nations has said they are going to authorize \$1.6 billion worth of Iraqi sales. Thirty percent will go into this fund to pay claimants, but that is all kinds of claimants. That is claimants who may have lost a vehicle. That is claimants who may have lost a business, who may have had a home destroyed in the war, who may have suffered some physical damage, or may have a physical claim in court against the Iraqis. So what we are talking about is a piddling amount when you consider the massive amount of damage caused in that war. And what we are talking about is, if environmental damage claims are included in the mere \$400 million, we really have very little hope that the fund, 30 percent of \$1.6 billion, will be available for Gulf cleanup. Is that right?

Mr. COLSON. Well, I think, Congressman, you have to anticipate that at some point more money would be going into that fund because there would be additional sales of Iraqi oil authorized by the Security Council. And in those cases up to 30 percent, an amount to be determined by the Security Council, would be placed into the fund for the whole range. You are correct.

Mr. TAUZIN. So to wrap it up and then I will turn it over to other members, what we have been able to spend in dollars on cleanup is two million, what is available is six million in a fund, and what we are left with is the hope that the United Nations will continue to assess from Iraqi oil sales, when they occur, whatever may be necessary to satisfy what may be required to clean up the Gulf. None of that is yet in place. We can only hope that the U.N. Security Council and the Secretary General will, in fact, effectuate such a plan. Have the Saudis yet submitted a bill for Gulf oil cleanup?

Mr. COLSON. Not to my knowledge, Congressman.

Mr. TAUZIN. Do you know whether or not the Saudis intend to submit a bill for Gulf oil cleanup?

Mr. COLSON. I can only assume, sir, that they would, but that would have to be done when they are finished with the cleanup. And right now we haven't even determined the procedures for making claims against this fund. Those matters are of a technical nature, and they are being worked out right now by the Security Council.

Mr. TAUZIN. Well, Chairman Hertel and Members of the committee here, I just want to make the case before we go to another vote, that what we have here is the second largest spill in this planet's history, 20 times larger than the *Exxon Valdez*. All we have done is pick up loose oil on the water. The rest of it is out there creating massive destruction of sensitive environmental areas and fisheries in the Gulf for years to come. And nobody has even thought to submit a bill to the U.N. to begin the process of cleaning it up.

And I don't think the U.N. has yet thought out from what you told me a complete process for separating Gulf oil cleanup from these other massive damage claims that are going to be filed against a fund that as you tell us is only about \$480 million so far. The picture we get is of a lot of inactivity. Congress very soon will get very energized on this issue and will be insisting that those who represent our Government do everything they possibly can to get this process moving before this damage is allowed to stand any longer. Thank you, Mr. Hertel.

Mr. HERTEL. It is incredible because we have heard in the testimony, and we have heard before that it is 20 times worse than the *Exxon Valdez*, and the spending on that was over two billion dollars. What we are learning today, and it is not your fault because you are working hard on it and your agencies are underfunded including the State Department, is that there is no one really in charge. Obviously, it wasn't part of the peace agreement; it should have been. This is going to cost more than the *Exxon Valdez*. Now we have got to have all the diplomats running around and we know how long that will take because there is no one in charge.

The allies should have been in charge. They should have had the wherewithal and the way to do it. The disaster was clear. Before you got there on the ground, we had not only the satellite pictures, we had the pictures on CNN, and we had still pictures so we knew how bad it was. Now we have this terrible mess, and it will be made worse. I think it is appalling, and we share with you your frustration. Mr. Laughlin.

Mr. LAUGHLIN. Thank you, Mr. Chairman. I am just curious where the media is.

Mr. TAUZIN. They were invited.

Mr. LAUGHLIN. When we had the *Exxon Valdez* hearing—

Mr. TAUZIN. They were invited, Mr. Laughlin. I want you to know that.

Mr. LAUGHLIN. Sir?

Mr. TAUZIN. We invited them.

Mr. LAUGHLIN. When we had the *Exxon Valdez* hearing, you couldn't get in the room because they were so thick with their cameras and their pads jumping on Americans, jumping on Alaska. And here we have an incident that is a criminal act, and we don't find them blowing the bugle to arouse the public and assist the people at the table who need assistance. And, Mr. Colson, you all really need assistance at the State Department. I think you are our representatives in the world community, and I am, frankly, disappointed to hear some of the answers and read some of the comments.

Unlike my good friend from Pennsylvania, I was not the guest of the Secretary of Commerce, but I served on active duty in the Per-

sian Gulf and saw the very things that Dr. Earle testified on—her pictures on the ground. I am in the Army so I didn't go underwater and wouldn't want to anyway. But it is appalling. Your pictures up there of the fires brought back the vivid memories when I flew into Kuwait with a group of soldiers by helicopter and as we drove around meeting with the units to drive through rivers of oil. And no one is upset about it.

The groups that came in here and thundered and wanted us to put double and triple and quadruple hulls on American vessels at a great expense, where are they? And where are the groups that wanted us to do a lot of other things to American companies? We are not hearing from them. And the environmental damage is much greater so we appreciate your being here. I hope the two Chairmen and the other Members of this committee can help light a fire on those people that you work for because a fire needs to be lit. We need more leadership out of the President of the United States in leaning on the United Nations and leaning on the ambassadors in that area.

And I heard Chairman Tauzin's questions to you, Mr. Colson, about a bill being sent to Kuwait. I just wonder has our Government contributed any money to the U.N. fund, and you may have been asked, and I wasn't in the room. Have our taxpayers, our Government paid any money to the U.N. to assist in this cleanup?

Mr. COLSON. No, Congressman. We did not make a financial contribution to the IMO fund.

Mr. TAUZIN. Would the gentleman yield?

Mr. LAUGHLIN. Yes.

Mr. TAUZIN. The fund we are talking about is a six million dollar fund, Greg. It is all they have. And as was testified, it was contributed by United Kingdom, Japan, and who else?

Mr. COLSON. The Netherlands, Canada—

Mr. TAUZIN. Canada.

Mr. COLSON [continuing]. The European Community and Luxembourg.

Mr. LAUGHLIN. Would that do several days of cleanup?

Mr. COLSON. I don't know how much it would do.

Mr. LAUGHLIN. You see, that is the frustration that we have up here trying to work with the environmental groups and work with industry and address the problem in Alaska, one of our fellow citizens, and then we almost take a back seat and do very little to clean up a mess that certainly we have an interest in. So I thank you for being here, and that is all the questions we have. I am going to go vote, Mr. Chairman.

Mr. HERTEL. You know, because of this series of questions the three of us have been asking, we certainly are going to ask the Coast Guard and NOAA for your estimate of the cost incurred and for the future for the cleanup to the best of your abilities. Mr. Bateman.

Mr. BATEMAN. Thank you, Mr. Chairman. Let me say at the outset that I share with Dr. Earle the supreme irony that this extremely barbaric, uncivilized situation exists in what we call the cradle of civilization. What an enormous irony that is. Could someone tell me whether or not these lakes or pools of oil that are contained in the desert can be pumped out, processed, refined, or any

use made of them? Or do they just have to sit there and evaporate over whatever enormous amount of time would be involved?

Dr. EARLE. It is my understanding that efforts are underway to recover at least some of that oil. The longer it stands, the less usable it becomes, of course, as the aromatics are lost into the atmosphere, but one concern certainly is that this be accelerated because with anticipated winter rains, greater risks to the environment develop. There currently is apparently not a great risk to the water supply that is beneath the desert, but with water coming from the winter rains, not only has that become more of a problem, but there is the anticipated problem of additional runoff into the Gulf itself. And the fact that it then becomes even less likely that it can be recovered. But we are talking, of course, tens of millions of barrels of oil. A lot of oil is out there in those lakes.

Mr. HERTEL. We are going to allow Mr. Bateman to yield to Mr. Weldon, and hopefully a Democrat will be here by then. You can continue because we are going to keep having these votes. This is an important subject. Is that all right?

Mr. BATEMAN. Fine. Had you finished, Dr. Earle?

Dr. EARLE. Yes.

Mr. BATEMAN. Another thing that I am intrigued by, and I guess I am trying to find some positive aspects of this situation, the Persian Gulf region is the major oil producing area of the globe and has been for several decades. Notwithstanding the incredible concentration of petroleum development, processing, and refining, apparently the Gulf has remained a very viable ecosystem in terms of the marine life, and animal life that it supported. Does that tell us anything?

Dr. EARLE. It tells us perhaps that life is resilient and that it can endure considerable stress. But it is not infinitely resilient, and enough is enough is enough. And while much of the Gulf now appears to be in reasonably good condition, it highlights the importance of protecting those areas that do remain relatively unscathed as the source of restoration for those that have been hard hit.

Mr. HERTEL. We will have to recess, and we will be back after the vote.

[RECESS]

Mr. HERTEL. We will resume. Unfortunately, this is not unusual, but it is going to be like this all day. Mr. Weldon.

Mr. WELDON. Thank you, Mr. Chairman. I appreciate your yielding time, and I apologize for having to leave during the testimony. I did get a chance to scan the testimony of each of our witnesses and do have a few questions that I would like to ask. I would also like to make a few comments.

As the testimony has indicated, the current focus is on the environmental damage of the massive oil spills that occurred during the conflict. I agree that should be a primary focus of this committee. However, I have some additional concerns that relate to the fires and their damage. One of the specific questions I have is in regard to the oil spill. It has to do with the damage that Saddam's people did to the manifold system during the conflict that caused the oil pipeline to open up into the Persian Gulf. It is my under-

standing that the only way we were able to stop it was to make a strategic strike on the manifold system. I had an opportunity to visit this system when I was in the Burgan oil field. Has there been any follow-up work done on this. Is there something that should have been placed on the manifold to prevent this? Or is this a situation that is impossible to pre-plan for, especially when dealing with this kind of environmental terrorism? Also, is this effective in ensuring that flow of oil is cut off so that it does not flow into the Gulf. Is this more effective than having a strategic strike on the manifold system as was done by our bombers? Also, it was very pinpoint as I understand it. Is there some lesson we have learned from this specific instance? Are any of you familiar with this?

Captain HOLT. Yes, sir. I was a bit familiar with it while the process was going on. At the time, because there was a war going on, and it was a war zone, it was felt that that was the only way that we could possibly effectuate any change in the situation without further endangering American lives in trying to secure the source. Whether or not any lessons have been learned is very difficult to say. I would certainly hope we don't have to deal with a war situation and an oil spill of this nature again, but there are so many variables in terms of manifold arrangements and pipelines and whether it is a gravity-fed pipe or a pump that feeds the pipe. It makes it very difficult to try and anticipate how you would do it generically. We almost have to look at each situation as it develops and decide the best action for that situation.

Mr. WELDON. The only reason I bring this up is that, although I hope that another war situation doesn't develop, we have seen in this part of the world, continuous conflict over the last 20 years; whether it be the Iran-Iraq War or DESERT STORM. We know that oil is one of the commodities that has been used and perhaps will be used again. In lieu of this, I would hope that we would consider maybe either automatic measures or automatic shutoff valves of some other kind to prevent other environmental disasters. I am not sure what technology would be used in another similar event. However, if a similar situation does occur again in Kuwait or Saudi Arabia or Oman or Bahrain or one of the other oil producing states, we need to have a system in place to ensure that such an environmental tragedy does not occur again. That is the only reason why I bring this up. I understand why this action was taken in this particular case. I was pleased to see it worked successfully. However, it seemed to me to be kind of a crude approach, and perhaps we can learn from that. I appreciate your response.

In regard to the fires themselves, what has perplexed me since I was over there in February and March was the fact that we on this committee have been pressured quite heavily to consider opening up ANWR for exploration and then development and production of oil. We are currently debating this issue. Yet, while we have been debating opening up the Arctic Refuge for the last six or seven months, we have been losing, approximately, six million barrels a day in Kuwait just from the fires themselves.

I am not saying that you can go in and solve this problem overnight. However, during the days in March, April, and May, as I said in my opening statement, I was working very closely with Red Adair. While giving a speech at an International Conference, what

I heard repeatedly from Boots and Coots and Red Adair, was "I will pull out of Kuwait completely if I don't get some response." In response to Red's impassioned plea for assistance, I wrote a letter to the President. It was Red Adair's opinion that our Government wasn't doing enough to force the governments in that area to allow him access to the support equipment necessary to do his job.

Here is a person whose expertise is putting out oil well fires, not filling out bureaucratic forms and dealing with ports of entry and the other problems that he was facing. I have to be critical of the State Department. I don't know who else to be critical of; but I am stressing the frustration of Red Adair and Boots and Coots and the other principals. I understand that we now have 20 firms there. However, what, if anything, has the State Department learned from this whole exercise? I have to add, Mr. Colson, I was somewhat taken aback because I did read your statement and I didn't see one mention of the fires. I saw a lot about the oil spill, but I didn't see anything in reference to the fires. Maybe I didn't read it thoroughly enough. However, I didn't see anything in here on the fire situation.

Mr. COLSON. Congressman, our role has been primarily to try to facilitate U.S. Government, U.S. agency operations in there—to get the people with the expertise on these issues on to the ground. The State Department doesn't have the expertise. I am not aware of the particular situation that you are talking about with Red Adair. But these are sovereign governments. They do have their own processes and procedures for bringing materials into these countries. And even though there is an emergency situation, their processes and procedures do need to be complied with, and our embassies in these regions have been spending almost all of their time trying to help deal with the kinds of problems that you have identified with respect to Mr. Adair.

Mr. HERTEL. Mr. Weldon, I could say a lot today about the State Department and about us not being involved in these agencies today or yesterday for cleanup and all the rest. I don't want to do that with Mr. Colson because he is the Deputy Assistant Secretary for Oceans and Fisheries Affairs so he has not been able to make those decisions. He works with the scientific community, and maybe we can have the other people in from the State Department.

Mr. WELDON. I appreciate the Chairman's comments, and he is right. I guess I am just expressing my frustration. I have raised this issue at other hearings on areas where I have tried to tie in the frustration of dealing with the Middle East. I am not happy with the way our State Department handled the whole situation. I said so back in March or April, and it is not a case of going in and doing anything to a sovereign country. We had at the time 550,000 troops over in that part of the world. And as a Member of the Armed Services Committee and as a representative, I am concerned about their health. I think if we can take in the massive amounts of military hardware and equipment that we did, the least we can do is to help to expedite the support materials necessary for American firms to do their job. However, that did not happen, and it did not happen to the point where Red Adair said, "If it is not addressed, I am pulling out," and Boots and Coots had the same problem.

I just don't accept the excuse that we have to work with the embassies in the area. It was an international disaster. At the same time, the Administration is saying, "We need to open up ANWR because our Nation's supply of oil is dwindling very rapidly." Basically, six million barrels a day were going up in smoke jeopardizing the health of not just the Middle East but of the entire world. This is an area that the State Department, and I would hope this committee, should address. Mr. Chairman, it is important that government through the U.N. and other countries address emergency response to oil spills and other terrorist ecological damage such as those caused by fires.

As I sit here reading the testimony of Mr. Colson, I see, and rightfully so, he is responsible for oceans and fisheries, as it relates to the oil spills. There is not a word in his testimony about the State Department's role in eliminating the fires and addressing the ecological damage to those fires. This is something I think we need to question the State Department on and hold them accountable for. Other than that, the other point that was addressed while I was out of the room dealt with documenting the evidence that will be used if and when we can convene a tribunal to hold Saddam accountable for his war and environmental crimes. And I understand that there is a process underway to provide this documentation to the appropriate State Department officials. I know the Department of Defense is doing the same thing from their perspective. I would ask that when that documentation becomes available that a copy of it be provided to Tom Lantos and John Porter who are the Co-Chairmen of the Human Rights Caucus. This information will be useful since we did hold a hearing in late July on this specific issue. This is the congressional attempt to document evidence that would lead to a tribunal to hold Hussein accountable, not just for the Human Rights violations but also for the environmental incidents that occurred in the Middle East. I yield back.

Mr. HERTEL. Thank you. Mr. Anderson from California.

Mr. ANDERSON. Thank you, Mr. Chairman. I think I will maybe direct this to Dr. Earle only because girls are usually better at figuring out costs than us guys are. If there is someone else you think should answer it, go ahead.

I have heard that it has been suggested that the costs of this Gulf spill will be about five billion dollars. With some people suggesting that the cost of the *Exxon Valdez* spill will be substantially larger than that, though that spill was some 20 times to 30 times smaller than the Gulf spill, I wonder how we come to this five billion dollar figure. And can you tell me a little bit about how this cost calculation is made?

Dr. EARLE. It does depend on how you count. And I think it is important in starting to recognize the differences between the two spills. The Prince William Sound spill extended over something like 1,100 miles. It was widely dispersed, and the terrain was quite different. In the Gulf, it is concentrated in the northwestern sector of the Gulf, concentrated by the winds and the tides and also that fortuitous little spur of land that kept the spill from going further south. So in a straight line, that is less than 200 miles that is covered, but, of course, it is a crinkly coastline and a lot of areas that are difficult to get to either by land or by sea.

In one sense, it is easier because it is a smaller area, but it is much more difficult because of access. And also because there is so much more concentrated in that area. The magnitude of it is simply staggering. Even with the amount that has gone into the atmosphere and the amount that so far has been recovered, what is left? The difficulty of recovering it makes it, well, a real challenge. And, quite frankly, the amount of money is in some measure almost not the issue. It is the impossibility of buying restoration. You can buy time. You can buy some efforts that are productive. You can protect areas that have escaped damage by using money to do so, but we are really faced with a very tough question here. I would like to suggest that others here be able to respond to where the money would be applied and how this so far figure has been arrived at. But actually we could spend a great deal more and still not be able to do what we would like to do which is put the place back in total good health again. I particularly would like to hear John Robinson respond if I could.

Mr. ANDERSON. I know I get a little concerned about this whole thing because the cost is not easy to figure. That is what it is going to do to our atmosphere and I guess the atmosphere of our world and other worlds and everything on something this size. I know that in California we thought we were doing fairly good, and we had offshore oil drilling off our coast. As a matter of fact, I was involved in it, and we thought it was very clean. There was very little pollution of any kind. But there were critics. Many people have criticized. Environmentalists say, "No, that gets up in the atmosphere, and it pollutes."

And then just recently I was up in Alaska on the Prudhoe Bay there, and, of course, the people up there, the governor and everybody, wants us to go into it. But, again, coming back, almost all the criticism I have received and the suggestion, "Oh, that is going to pollute our atmosphere and just destroy it." But all that is so small compared to how big this was, and if this is as big and as bad as it is, it is going to be up making our environment and our atmosphere terrible. And I don't think we can just disregard it. At least that is a little bit where I am coming from on it because I know I went up to Alaska with the thought of getting some oil down. But since I have been back, almost all of my contacts have been, "Don't do it because of how it will pollute and how it will cost us." If someone wants to answer the question, you pick them because—

Captain HOLT. I don't think I have anything really to add to that. I think the Saudis have put together a plan for cleanup that is actually less than five billion. I think it is in the neighborhood of \$160 million that they would like to spend on cleanup, and that proposal is now being considered by the UNEP. I think at their donors' meeting in New York in November, there is going to be some consideration given to funding—a fairly modest cleanup at least on the *Exxon Valdez* standards of \$460 million worth. That was the Saudis' estimate of what it might cost.

Mr. ANDERSON. But if our spill was 20 to 30 times less than that and cost five billion, how can theirs be so small? Do you mean they can get people to work for nothing?

Captain HOLT. No. I think that, again, the fact that it is concentrated in a small area, that the oil is perhaps a little bit easier to

remove than it was in Alaska, I think the difference in setting is probably what makes up the difference. I don't think that we could productively employ 10,000 people in the Persian Gulf to work. I just don't think that the facilities could be built there. Even as remote as Alaska was, I think trying to support a labor force that large in the Persian Gulf would be nearly impossible. And I would imagine that the real answer is that a lot of the Persian Gulf spill will just not be cleaned up to the degree we did in Alaska. It just probably cannot be cleaned up.

Mr. ANDERSON. Thank you, Mr. Chairman.

Mr. HERTEL. Mr. Laughlin.

Mr. LAUGHLIN. Thank you, Mr. Chairman. Mr. Colson, can you tell us what the State Department has done with the other Arab states as far as focusing attention on the criminal conduct by Iraq and turning loose the pipelines and the firing up the wells that have caused all the environmental damage?

Mr. COLSON. Congressman, I am not aware specifically about what we have been doing with the other Arab states. But I can say this that we have been very energetic within the United Nations to ensure that the liability for Iraq's conduct has been clearly established, and through Security Council resolutions that has been done. And now we are working and providing a great deal of the staff support to get this compensation fund in place through which it will be possible to make claims against Iraq oil sales when and if they do occur so that there is money available for claimants both for environmental purposes and for other purposes.

Mr. LAUGHLIN. Is there any plan or program at the State Department to continually or on some periodic basis to remind the world community and the Arab community what Saddam Hussein ordered his Iraqi citizens to do in Kuwait and their efforts to destroy the environment by turning loose the oil that he unleashed?

Mr. COLSON. Congressman, you are going to have to ask some people over on the political side of the State Department that deal specifically with these matters. I am not aware of anything that goes quite to what you have just spoken. But we are going to ensure that these U.N. resolutions, which set out some very, very clear criteria that Iraq must meet, are complied with before the sanctions are lifted. I am sure that we will ensure that those criteria are met.

Mr. LAUGHLIN. Well, you are here representing the State Department, and I would certainly urge you to carry that message back. We have had a lot of parades. Some have even said too many in a derogatory manner, I think. I have participated in a lot of those parades. They have been parades of great national celebration of the military victory we have achieved, but it seems that we have fallen silent on the war that was waged against mankind and against the environment, and your department is one of the leading departments that could give validity to reminding the world community of the criminal acts that were taking place. So I would urge you to carry that message back to the Political Department and perhaps, Mr. Chairman, we need to get the Political Department up here. If they are going to be silent on this criminal conduct and not keep the world community—and the media is at fault in this area. They will beat up on whatever the headlines are today

in America, but they have been very silent in the last four to six months on this very criminal conduct.

Mr. HERTEL. Well, Mr. Laughlin, you are right. Mr. Colson is with Oceans and Fisheries so we have indicated we would like other State Department people, and I think he will let them know.

Mr. LAUGHLIN. If Mr. Colson assures me he will carry the message back, I won't ask him any more questions.

Mr. COLSON. Congressman, I certainly will carry the message back, but, again, I do want to stress that it was under our leadership, that that Security Council resolution specifically mentions liability for environmental damage. So, that is on the record, and that it is part of the claims to be made against any eventual Iraqi oil sale. So it is now time to get the job done as far as the cleanup work that needs to be done. And a mechanism is available and will be in place, and there will be money in that fund when Iraq rejoins the international community that can pay for the damages, environmental and otherwise, that Iraq's actions have caused.

Mr. WELDON. Will the gentleman yield?

Mr. LAUGHLIN. Yes.

Mr. WELDON. I appreciate the response and the question by my friend and colleague from Texas. We are going to hear in the second panel from a representative of—the President of the World Information Systems, Mr. Golob. I hope that is pronounced correctly. One of the things that he will say is that, the State Department has helped ensure that the environment is given consideration in terms of claims. However, he is also going to testify that the Governing Council of the Claims Commission is not placing the environment as one of the priority concerns.

Therefore, just because this statement was included in the U.N. resolution, it doesn't necessarily appear that it will be a priority consideration of the environmental damage claims. In fact, it seems that the environmental claims are going to fall below the other claims. It is the role of the State Department to convince the Governing Council of the Claims Commission that environmental concerns should be a priority.

Mr. COLSON. Well, that Claims Commission chairman, is going to be dealing with death, personal injuries, and a lot of other issues of that character. And, you know, in any prioritizing of the kinds of claims that the commission would first look at, it may well be that claims to clean up a beach in Saudi Arabia should take second place to some of the other kinds of claims that might be made in front of that kind of Claims Commission.

Mr. WELDON. I understand the importance of compensating the loss of human life. However, I am talking about the fact that we are going to hear testimony that, "The Claims Commission in Geneva appears to have relegated," and I am quoting from the testimony, "the environmental claims to the lowest priority position ranking that behind individual claims, business claims, and government claims." I would agree with you that there are certain things that should take precedence. But I would disagree that environmental claims be at the bottom of the priority list. I would also just say that while we are crediting the State Department for including environmental concerns in the resolution, I think we also have a responsibility to follow through in the prioritization of the claims

that will be handled by the commission. I thank the gentleman for yielding.

Mr. LAUGHLIN. Thank you. And, Mr. Colson—

Mr. COLSON. May I respond to that? It is my understanding, Congressman, that the environment is not a category of claims: an individual can make an environmental claim, or a business can make an environmental claim or a government can make an environmental claim. So it is not that it has been relegated to a different category of claims, but if the government of Saudi Arabia makes a claim in this commission for all of the damages that Saudi Arabia has suffered during the war from Iraq's conduct, a component of its claim will be for environmental damage in Saudi Arabia.

Mr. WELDON. I would just say that I appreciate that, and I would just hope that the committee would take heed when we have Mr. Golob testifying too, he will be able to respond to the State Department's response.

Mr. LAUGHLIN. Mr. Colson, I told you I wouldn't ask you any more questions so I would ask you to take this observation back to the political people at the State Department, and that is that we do applaud their action in getting the U.N. resolution on liability. However, that reminds me of the star running back who scores an 80-yard touchdown in the first quarter and goes back to the huddle and tells the linemen what a great running back he is, and they quit blocking for him and quit opening the holes, and so the second, third, and fourth quarters they don't score, and they lose the ball game. I am afraid if your political people don't do more than just get this resolution and keep the world community's awareness heightened, we are going to lose the second, third, and fourth quarters and eventually lose much more than we should lose in the environmental area. So thank you very much.

Mr. HERTEL. I would like to point out to the subcommittee—remind them of what the Congress has done. First, in the Armed Services Committee there was the supplemental appropriation, and then at the subcommittee we made sure that NOAA could go forward and operate and be financed. Secondly, I think the Members recall that in March we passed a concurrent resolution that declares that Saddam Hussein and the current Iraqi regime should be held liable under United Nation Security Council Resolution 686 with the costs resulting from these deliberate destructive acts including (a) cost of containment incurred by any nation, (b) cleanup costs incurred by any nation, (c) the cost of restoration of the natural resources, and (d) any other costs associated with these environmental catastrophes.

Now, it would seem to me, and I have talked to Chairman Tauzin, that since it is taking so long to get the Iraqi money that we really should call upon the Saudis, who we invited today, to assist with the costs. Several of us have been there. They have incredible amounts of money, and it disturbs me to read in Tuesday's Wall Street Journal how Saudi Arabia does not consider this a priority. They have got the money. The U.N. should be able to guarantee that they get reimbursed. To wait until we get the money makes it worse, and the Saudis have the key role here. They have got ostentatious wealth of all kinds over there.

Mr. LAUGHLIN. Would the Chairman yield?

Mr. HERTEL. Yes.

Mr. LAUGHLIN. Did the Saudi government representatives indicate why they would not appear today or could not appear?

Mr. HERTEL. The State Department interceded for them and said they couldn't make it.

Mr. LAUGHLIN. Then I would suggest to the Chairman that we invite them a second time with convenience, and if they fail or refuse to appear, then we certainly notify the other Members of our body and suggest that we take some legislative action, whatever that may be, to get their attention or to get our State Department's attention that we want their attention on this matter. Thank you, Mr. Chairman.

Mr. TAUZIN. If I might interject, we are in a delicate position here. First of all, the Saudis did not cause the spill. Also, the spill affects not just the Saudi coast and the Kuwaiti coast, but it affects other nations in the region of the Gulf who have had their fisheries and their environment impacted. And while it is true that the Saudis have a great deal of resources and may, in fact, be able to expend some of those resources in cleaning up what is essentially their biggest impact problem, I am sure the State Department has some concerns about how we proceed in terms of the diplomacy involved in that effort.

Mr. LAUGHLIN. Would the Chairman yield a moment?

Mr. TAUZIN. I will be happy to yield to the gentleman. The concern I think the Saudis have, as victims of this spill, is before they engage in a very big effort with their own money to clean up the spill is the need for real assurances. The Saudis must see the U.N. and the United States, who is one of the prime movers, diligent effort to force Saddam Hussein or his successor, to reimburse the Saudis with the moneys from future oil sales.

It seems to me we should not be beating on the Saudis. Our first objective ought to be to encourage them to make that investment by doing everything we can with our State Department, the IMO representatives, and our U.N. representatives to secure those assurances for the Saudis if they up-front the money, they are going to get paid. In other words, I think that should be our biggest effort as we simultaneously encourage the Saudis to spend money on cleanup. I will be happy to yield to my friend.

Mr. LAUGHLIN. I certainly agree with Chairman Tauzin's comments and observation. And I don't intend to imply that the Saudis are responsible for causing the oil spill problems and the environmental problem, but they certainly have a responsibility in working to cure the problems. And perhaps we, Mr. Chairman, ought to invite the other coalition members that participated in the war effort to heighten the awareness. I certainly agree we probably wouldn't have to do a lot of this if our President would give more leadership in this area as he did in the war effort bringing the coalition of nations together to put the pressure on the Iraqi's to get their act together.

Mr. TAUZIN. Well, the gentleman is correct, and this should be an easy one for the President and for the United States and the coalition.

Mr. LAUGHLIN. And one that would really enhance the standard is our environmental President.

Mr. TAUZIN. Environmental President! It would be easy, I think, for the Secretary General of the U.N. and our U.N. representative to join hands with our coalition partners.

For example, if the State Department would be willing to work with the U.N. to dedicate a mere 10 to 20 percent of what is going to be collected in that fund, as part and parcel of the commitment to Saudi Arabia. A 10 to 20 percent dedication from the fund, which is only 30 percent of the \$1.6 billion sale, would equate to about \$35 to \$40 million. That is not anywhere near what is going to be needed in the end.

The \$35 to \$40 million would represent something like six times what is currently available in the international fund. I am told by those connected with the estimates and the planning of cleanup that \$35 to \$40 million could get phase two started immediately. Phase two is the shore cleanup. Once it is started, once there is an activity going on to clean up, world attention will focus on it, as it did in Prince William Sound. And as the coalition partners and U.N. focuses on it, then the international environmental organizations may be able to get in and take pictures a little more and see what is going on. Focus might be directed against Saddam Hussein and Iraq to pay more and more of these enormous costs as it becomes clearer to people through television coverage.

Now, it seems to me that this is a workable plan. If the State Department was willing to undertake it, to come out early, up-front to encourage a U.N. effort to dedicate a small portion, 10 to 20 percent of the fund's proceeds from a \$1.6 billion sale, that we could get the ball rolling. It would be the commitment, I think, the Saudis must see up front; such as the earnest money people give one another to bind a contract. So I would urge the State Department to seriously consider this proposal.

I think without the U.S. leading the way, we will be having hearings like this one for the next several years, looking at new pictures of the same oil damage as we wait for all these other claims to be settled. As Mr. Weldon pointed out, there are some priority claims, which we understand. We can't wait for the U.N. to try to settle all the questions of chemical warfare and nuclear warfare before we really get our hands on a workable plan for Iraq to sell its oil.

I think we need an innovative, first-strike approach that would get some earnest money to the Saudis before we can ask them to make a larger and larger cleanup effort, knowing that we are going to stand behind them to get reimbursement. And so, Mr. Laughlin, I think you are right on point. I think our President and our State Department and our U.N. representatives really need to get going on this if they can. I would urge you please to consider that.

Mr. HERTEL. I agree that the U.N. should agree to reimburse the Saudis when they get the money from the Iraqis with compounded interest at whatever percent they want to set as far as I am concerned because we can talk about not only the cost but we can talk about compensation for damages. I don't care how much we charge the Iraqis; I think the U.N. should and the United States should be able to say that money will go to the Saudis.

But, in the meantime, let us just talk again about what it means to have this damage continue. Again, I refer to the Wall Street

Journal article of Tuesday, and they point out that when they were finally able to cut through some red tape and some small coral islands in March and allow U.N. and U.S. military crews onto the islands, they were able to clean the oil off to the extent possible. They saved 65,000 chicks that were subsequently hatched on Karan. As many as 40 turtles per night were returning to the island, and these turtles, as a British ecologist Peter Vine, points out, "We are talking about turtles perhaps 50 to 70 years old born before this oil was even produced."

So, while we let the diplomats go on and we will push to have our resolution passed by the Congress. It is common sense that the international community should back up the Saudis until the Iraqis pay. The Iraqis must pay; they lost the war. And I will say once again the Saudis do have wealth. We are talking about their country and they have a responsibility to the environment.

Mr. TAUZIN. If the committee will bear with me, Chairman Hertel, you make a point. We need to be on with this as rapidly as we can. It is the facts about the Arabian Gulf as they compare to the Prince William Sound that are relevant here. The normal tides in the Gulf are just one or two feet. Prince William Sound had tides 22 feet. The normal wave action in the Arabian Gulf is one to three feet, six feet in Prince William Sound. The normal storm wave is six to eight feet in the Arabian Gulf, and there are very few storms. There are lots of storms in Prince William Sound. I have been there. Waves get up to 12 feet, and extreme storms in the Prince William Sound get up to 30 feet.

If we had not had a responsible party, Exxon, a big international well-heeled company to get out there and do a lot of cleanup, many experts say that those conditions in Prince William Sound would have cleaned the Sound up over time. But that is not going to happen in the Arabian Gulf. It is not going to happen. The Arabian Gulf will not clean itself up probably in our lifetime. And as the Chairman points out from the Wall Street Journal article, there are some good things that could happen if we could encourage the Saudis to trust us enough to start spending some money there and trust the United Nations enough to hold Saddam Hussein's feet to the fire.

I am just suggesting, Chairman Hertel and Members, that we could do a lot to encourage the Saudis by being more aggressive at the U.N. in assuring that earnest money is coming and that reimbursement is coming.

Mr. WELDON. Will the gentleman yield?

Mr. TAUZIN. I will be happy to yield, Mr. Weldon.

Mr. WELDON. I agree with my colleague. I know we are preaching to the choir here to the Friends of the Earth, who will testify shortly. However, I think we are hearing a great deal of frustration from the Members that the environmental community also has an obligation here. They were out front on the *Exxon Valdez* oil spill, and while I am not saying they haven't been responsive, certainly this is a role that we just can't play alone here in the Congress or our Government.

The environmental community worldwide has got to express its outrage. I think there is a deafening silence coming from many of the environmental groups who are not speaking out on this issue

and that is unfortunate. I do not intend to cast this on those that are here in the room but those that aren't here and those that haven't been involved when you are talking about a spill 20 times larger than the Valdez, there should be international outrage expressed on a regular basis which would put pressure on the President, Congress, and the world community to respond. We haven't seen anywhere this outrage near what we saw with the Valdez, and that is unfortunate.

Mr. HERTEL. Let me say I want to put this article in the record that I have been referring to several times.

[The Wall Street Journal article can be found at the end of the hearing.]

Mr. HERTEL. And let me point out I am not just saying they should do this because they have the money. I am saying that such a great number of the oil damage is on their territory.

Now, we don't tell the countries what to do. We work with them. But I indicated before in a question, you know, our military people especially our women had to live in different ways because of customs over there, and General Schwarzkopf was trying as hard as he could to make sure that the forces all got along and that traditions were honored, et cetera; people not being able to wear religious jewelry sometimes, having to have religious services in the middle of a base of hundreds of thousands of people in a tent enclosed. I could go on and on about this.

So our Government has recognized the differences that we have in looking at things. I am saying that this is important to the world community. It is important to the Gulf. It is important to Saudi Arabia that this be done. And I think they should take note of our concerns as we have taken note of their concerns.

Now, with respect to the request we made before. We will make it in writing regarding the estimate of expenditures. We will also ask NOAA if they have any plans to send a research ship there to the Gulf. With that, I am going to ask the next panel, Dr. Blackwelder and Mr. David Usher, if we could have a luncheon recess or if that would spoil any of their schedule?

Dr. BLACKWELDER. That is fine.

Mr. HERTEL. Is that all right? I think then we could come back at 2 p.m. for the next panel. And I want to thank this panel for all their advice and all their work and for staying so long. Thank you very much.

[RECESS]

Mr. HERTEL. We have Mr. Bateman's permission to resume the hearing. And, Doctor, I wonder if you wouldn't mind if we reversed it because Mr. David Usher, the President of Marine Pollution Control Corporation, has to catch a plane to California so—

Dr. BLACKWELDER. Please. That is fine with us.

Mr. HERTEL. We have some time, but you never know about 395. And Mr. Usher is from Detroit and lives right on the river, and I have been over there in the marina. In fact, I watched the fire-works. I know where you live. So you are a neighbor of mine, and we are happy to have you here. And we would like to begin. I am sorry. They will try to get here. The problem today is that they are

trying to move ahead on the Crime Bill, and most of the votes are every 15 minutes. We had two votes at lunch alone so they will try to get back, but we will just proceed. OK. Mr. Usher.

STATEMENT OF DAVID USHER, PRESIDENT, MARINE POLLUTION CONTROL CORPORATION

Mr. USHER. OK. Thank you. I appreciate it, Congressman Hertel. I am going to be a little brief so I am going to eliminate some, but it will be in the testimony itself if you don't mind.

Mr. HERTEL. We will put the testimony in the record.

Mr. USHER. OK. Thank you very much, sir. I want to express my appreciation to these committees for the invitation to testify on the Persian Gulf spill. My name is David Usher, and I am President of the Spill Control Association of America, a professional trade organization composed of more than 100 private companies which handle hazardous material and oil spill control. I am also President of Marine Pollution Control, a company in Detroit which has assisted in hazardous material and oil spill control problems for 25 years. We have participated in most of the world's major oil spills, including the *Exxon Valdez*.

I have been in the Persian Gulf four times returning most recently last week. The first time was during the war when I was honored to be chosen as a member of the U.S. Coast Guard team appointed by the White House to assess the spill. In the later three visits, I served as Chief of the International Interagency Assessment Team of the International Maritime Organization, a specialized agency of the U.N. concerning maritime safety and marine pollution.

As you know, when the world learned of the massive oil slick in January, IMO received offers of help to combat the disaster from several of its member states. It was quickly apparent that the spill was one of the largest ever and that no one government, no matter how well prepared, would be able to handle the enormous protection and cleanup efforts required and that international cooperation and assistance would be necessary. It was clear that the oil pollution incident was certainly of the severity envisaged in article seven of the International Convention on Oil Pollution Preparedness, Response, and Cooperation, 1990, therefore justifying a request for assistance.

This was the first time such an international cooperative effort was used in an oil spill crisis and an excellent real test of the OPRC Convention. The Persian Gulf oil spill crisis, as tragic as it was, was an example of cooperation never witnessed before. The prompt action taken by the Persian Gulf states, the international community, and IMO certainly helped to minimize the effect of the spill.

On the spill itself, before I describe some of the work accomplished in the Gulf, I want to commend the U.S. Coast Guard, NOAA, and the Environmental Protection Agency as well as the U.S. Army Corps of Engineers for the work each of these agencies contributed to the Gulf. Each provided the most professional assistance possible, were totally committed, offering advice and were excellent representatives for the U.S.

As to the status of the oil spill cleanup, let me indicate that I believe many of the highly visible spill areas have been cleaned up. I make this assessment guardedly. One major question always faced by governments, companies, and individuals that I represent is a very poignant and very important question and that is: How clean is clean? And, gentlemen, I can't stress that enough.

Mr. HERTEL. Let me just ask if it could be cleaner than what they call clean after the cleanup in the Prince William Sound? This is what they call clean there. It is a rock. It is black still from oil, but that was qualified there as clean.

Mr. USHER. You mean in Prince William Sound?

Mr. HERTEL. Right.

Mr. USHER. Yes. That is a very interesting point. You know, it depends upon a given area and what the quality of the area demands. And, obviously, in Prince William Sound, the quality demands were much higher than they are presently in the Persian Gulf or the Arabian Gulf. And that is one of the frustrations and why we ask, "how clean is clean?" How far can we go? What are the economic resources? What are the vital resources that we have to do the job? And without being political, obviously, I must be very honest and state it in that context.

To continue, obviously oil remains, but overall I believe that the Gulf waters are generally free of oil and most of the work yet to be completed is on the shoreline. The efforts to clean up the spills were made more difficult by three major contingencies. One, the spill occurred during the war, and obviously, we were hampered by live ordnance and the hostilities in the area. Ordnance is still hampering efforts to assess the pollution impact to the Kuwaiti coastline. The Gulf waters are very shallow, not permitting the use of most appropriate vessels designed for at-sea oil spill cleanup and I might add even for inshore cleanup. Because one of the problems that we have is you can go out a mile in the Gulf, and you will only have a meter or, as you know, three feet of water. Any kind of a craft that you would use if you attempted to retrieve anything on that craft, obviously, the draft would then put you on the bottom.

The third thing was quicksand called "SABKHA," and this was really a factor in those waters. I can attest to it simply by the fact that the second time that I had gone there I found myself up to my torso in the quicksand so I can assure you that it is real.

But despite these difficulties, the IMO team managed to make substantial progress and make it relatively quickly considering the circumstances and the limited financial resources available. I stress that. I also want to point out that contrary to conventional wisdom, the environmental damage as a result of the oil spill appears to be less than anticipated. The damage in the Gulf appears to have been minimal in a sense. There have been no catastrophic reports of environmental damage with the exception of the movement of the shrimp fleet to the Red Sea. The shrimp fleet issue isn't in the text by the way. But I would like that included.

Nature, not man, has performed the lion's share of the cleanup. The lessons of oil spills indicate that human activities be limited to low energy, environmentally sensitive areas or highly populated ones. Occasionally, human activity, although well-intentioned, can be more damaging to the environment than the actual spill, espe-

cially in areas where human activity was minimal prior to the accident.

Of growing concern is the situation in war-torn Kuwait. Hundreds of oil well fires set during the war are posing a major ecological crisis. Billions of gallons of crude oil are spilling from these wells. These spills are creating oil lakes some hundreds of yards long, some which are contained by earthen berms. Ground penetration is a possibility, and should breaks occur in the berm, we may witness new complexities demanding increased responses in a country already financially strapped by the cost of rebuilding.

It is essential that the international community assess and address the funds and resources needed to bring the oil spill crisis in Kuwait under control. The spill contributed to a global awareness of the need for an international approach to cope with major environmental disasters. An international approach to oil spill containment and cleanup was always considered desirable, but economic, political, and geographic issues were a barrier to the establishment of such an international agency. The *Exxon Valdez* was the catalyst which finally broke a long-time logjam and the OPRC Convention which was developed and adopted in its aftermath represents the global consensus for the way forward.

The international efforts during the Persian Gulf spill can be considered another step forward in the process of international cooperation in such accidents. The countries which assisted either directly or otherwise with funds or with equipment have made major contributions in cleaning up the spill. Much progress and many lessons have been learned as a result of the spill. Present spill response equipment is generally a mainstay of containment efforts in such accidents. While no one can predict where or when a spill will occur, we should strategically locate equipment and trained, professional personnel in key areas around the world. A strong, highly-skilled spill response community already exists in the U.S. and Europe.

We must refine and build on international cooperation now that IMO initiatives have been tested and proven to be effective. In this case, I urge that the U.S. ratify the OPRC Convention treaty as soon as possible. The U.S. can demonstrate international leadership by being the first to ratify and serve as a catalyst for other countries to follow this lead. Organizations responsible for cleanup must use the most sophisticated public communications skills to inform the public. Media reports, in many instances, have given misleading impressions. Let us hope that the Gulf spill, as unfortunate as it was, can be an historic environmental landmark leading to the creation of more sophisticated response systems worldwide. I would be pleased to answer questions, if you have any.

[The prepared statement of Mr. Usher can be found at the end of the hearing.]

Mr. HERTEL. Thank you. I do have some questions, and I think we will ask you first so you don't have to worry about the airport. Can you give us some comparisons to what you know about the disaster at Prince William Sound and the cleanup versus the Gulf? Obviously, it is from one extreme to the other but as far as expense by area, as far as the difficulties in the water versus the difficulties on the shore in those two locations?

Mr. USHER. Yes. As described by Dr. Earle earlier this morning, there are the major differences in geography. But there are also social differences that depend upon which way people go and what their interests are. I come from the private sector as you well know, and our job is to clean up. We maintain a business but we also have to be sensitive to the issues of where we are involved in our activities. And there were many frustrations in the sense of what we saw and what could or could not be done. Much depended on financial resources as we all know now. But Prince William Sound, being as environmentally sensitive as it is, as well as its reliance on hunting and fishing, the tourist trade certainly highlighted the issue. And the other point is that, of course, there was a company the size of Exxon that was involved and it was being heavily criticized. The issue in the Gulf was really overshadowed as we have all heard this morning by the fact that the hostilities were of primary concern and the spill itself was secondary. But the three points that I tried to make in my testimony are extremely important also. The fact that we had to face, and still do face, problems with live ordnance, stray ordnance in areas even in Saudi itself where training had been taking place for the troops for all the coalition forces, plus sea mines that had floated ashore in some cases. So these are some of the primary things that we faced in the Gulf as opposed to what we faced in Prince William Sound.

Water conditions, the tidal differences are there, the currents are different; obviously, the wave heights and so forth. You don't have the high energy that you do have, of course, in Prince William Sound at times. But, again, one must also consider the fact that you have a beach that goes from the Persian Gulf to the Red Sea; in essence, a generally untraveled area.

I think we took a step forward. I know that we can't take giant leaps. I wish that was the case, but one of the interesting things to me was the fact that, in the case of Saudi during the war, there were many civilians that I had had the opportunity to talk to that had not realized the severity of an oil spill.

But through the medium of television, they had seen things such as the oiled-soaked birds and problems of the magnitude on the beaches, and this information was something new to them. So I think that a step forward has occurred in the sense of an awareness of the public. The public was, obviously, very aware of Prince William Sound but not as aware in the Persian Gulf because of the hostilities. So we were sort of second priority to say the least. And we have worked with a minimal amount of money as you heard.

I might add that we are still working in the area. My acting chief is there presently, as Mr. Golob had seen when we were there. Our work force, as far as office staff, at the highest point was three people—myself, the acting chief, and a yeoman to help us with our paperwork. But we did have two teams that were out in the field, and these teams were doing various projects. We had a total of some 15 projects that we have been working on. One of them was mentioned this morning in reference to Karan Island where the turtles had been nesting. And so we picked very high visible areas to work on in hope that this would lead the way to the nations of the Gulf to understand what can be done and how it can be done. And presently, we are working on techniques that we

haven't had the opportunity to work on before. But because of the lack of funds to continue the way we would like to, we are doing R&D work with some very basic ideas—very, very basic ones—that are not generally used in that territory. And one of those ideas is using a Rototiller-type of technique on the beaches. We are churning up those beaches along with the use of water jets. And while we do that, we put a containment boom out and the oil that comes from the underside is then released to the environment, and we pick it up with the containment boom that is an absorbent product.

So these are some of the things that we are trying to do at this time to make it real clean and easier to do the cleanup work, if and when additional funds come.

Mr. HERTEL. I appreciate the specifics on that. You know, earlier today and if the Members were still here, I would still say the same thing. People were criticizing the environmental groups for not being concerned enough and the media, and I guess it is always easy to criticize the media. Environmental groups are concerned. We certainly have been contacted about it. There is a difference in public opinion, and I guess that is the difference if something is in your own backyard or as far away as Alaska. But that doesn't mean that those of us with responsibility, whether in the Administration or in the Congress, should be less sensitive. Since this is on an international problem, that responsibility increases.

Let me ask you a question that is of domestic scope. Are U.S. contractors at a disadvantage when bidding for cleanup jobs in the Middle East? Have you heard that? Do you know that?

Mr. USHER. Well, yes, in some senses they are and in some senses they aren't. And I will start with the ones where they have been at a disadvantage. For example, Veco has been a subcontractor to Crowley Maritime. Crowley Maritime has also been involved with Bectel. There is another company called Martec that had been involved. Now, their activities have ceased at present because funds that were available, according to my information have run out. So they have a skeletal force there and they hope that there will be additional funds made available in November for them to continue the work that they had been doing. This is almost embarrassing to say but the maximum number of people that worked in the Persian Gulf were some 350 as opposed to the 12,000 that worked up in Valdez. But the work effort has been a very good one. One of the things that we were very comforted by, as Captain Jensen had mentioned this morning, was that the MEPA group for the Kingdom of Saudi Arabia had really only gotten its mandate three days prior to the spill to become an operational group. And the enthusiasm of the people who work in that agency was very encouraging. It helped us a great deal.

Now, the disadvantage. The first disadvantage was the fact that no funds were available. Two, our distance; that is to say as far as people coming from the States to work. Now, in my particular case, I was asked to join the International Maritime Organization, as I stated, as its Chief of the International Interagency Assessment Team. Prior to my receiving that assignment in May, there were contractors that were picked from the Netherlands and the UK, and they were the contractors that were working along with one Saudi contractor. I can assure you of one thing that if funds were

available, the American sector certainly would have an opportunity to work there. They have the capability without a doubt. I am proud to say that Marine Pollution Control, my company, is one of the companies that has worked on these type projects as I said, for 25 years. So it isn't a matter of a prejudice against American companies, it is a matter of having the funds in order to do the job that needs to be done at hand—the balance of the job on the shoreline.

Mr. HERTEL. I will call on the Chairman of the Coast Guard Subcommittee.

Mr. TAUZIN. Gentlemen, thanks again for your attendance, and our apologies for the fact that so many of the Members have not returned. That usually happens in afternoon sessions when there are votes on the floor. We apologize for that.

In reference to your testimony, Mr. Usher, you seem to minimize the remaining damage. I am a bit surprised to read that you say, in effect, that contrary to conventional wisdom, the environmental damage appears to be less than anticipated. In effect, you say that damage appears to be minimal with no catastrophic reports, and yet the reports we are hearing from other environmentalists, Friends of the Earth, for example, point out that every marsh and every mangrove swamp has probably been devastated. That sounds like rather catastrophic results.

Mr. USHER. Well, let me tell it to you the way I see it. Obviously, that is why I am here. Again, I want to stress one point: "How clean is clean?" Can we go into every area and should we? And there is a sense of doing damage to an area that prior to that didn't have human contact of any consequence. Sometimes we find that it is better to leave an area instead of trying to coax it along and get it back to what was considered its original state.

Mr. TAUZIN. I understand that debate, but if a mangrove swamp has been killed—I heard reports that every mangrove swamp has probably been killed.

Mr. USHER. No, I disagree, sir. There are three of them—

Mr. TAUZIN. But isn't that rather catastrophic?

Mr. USHER. Well, again, "catastrophic" or the definition of the word "catastrophic" depends upon the priorities that one has. I am not trying to minimize it. Let me just state clearly. As you will notice, I said that the fishing fleets had to move from the Persian Gulf to the Red Sea because the shrimp fleets experienced problems. They weren't able to do any of their catch there. However, the important factor is that sometimes we have a tendency to overstate these issues, and I have been in many spills through these 25 years of activity, and I will say that nature cleans up much of the areas. I was there in February, and I have been back three times since then.

Mr. TAUZIN. Have you seen our pictures?

Mr. USHER. Yes, I have. And I have many pictures that I could show myself.

Mr. TAUZIN. It doesn't look to me like nature is cleaning up a whole lot.

Mr. USHER. Well, you are looking at areas that have been picked, sir. I can also show you areas that are cleaner than the ones that you have seen. Let me tell you why I said what I did. I am sure that all of the information is not in yet as to what the real damage

is. And if additional funds were available, I am sure that research would be done on what the decision will be in the long run as to what the effects will be.

But from what we have seen, there is a lot of cleanup in the areas that we have traversed many, many times. We have traversed the area from Khafji down to Abu Ali which is some 644 kilometers. And I can assure you that there is improvement. The improvement, again, relates directly to my statement "how clean is clean?"

Mr. TAUZIN. Well, let me turn to—let me pronounce it right, Mr. Golob?

Mr. GOLOB. Yes.

Mr. TAUZIN. Is that your observation? The damage has been minimal and that there really are no catastrophic effects of this spill?

Mr. GOLOB. I would differ strongly with Dave on this subject. Based on the information that we have received about the impact of the spilled oil in the marine environment and the terrestrial environment, there has been widespread devastation. It is true that there hasn't been sufficient funding to do an accurate damage assessment of the marine and terrestrial environments, and as a result, there may not be the type of specific information required to detail the damage. But based on the information we have and, of course, the information that Dr. Earle provided earlier today, there has been catastrophic damage.

Mr. TAUZIN. Now, you have been in Kuwait. Have the Saudis allowed you in? Mr. Usher, you have been in Saudi Arabia, I take it—

Mr. USHER. I have been in Kuwait also, sir.

Mr. TAUZIN. Kuwait.

Mr. USHER. Yes.

Mr. TAUZIN. How about you, Mr. Golob? Have you been allowed into Saudi—

Mr. GOLOB. In Kuwait and Saudi Arabia.

Mr. TAUZIN. And Saudi Arabia. Mr. Blackwelder, have you testified yet?

Dr. BLACKWELDER. No, I have not.

Mr. TAUZIN. So we are going to wait on you then. Let me—

Dr. BLACKWELDER. Neither has Mr. Golob testified.

Mr. GOLOB. Nor have I testified yet.

Mr. TAUZIN. Oh, I understand. OK. Let me turn back to you quickly then, Mr. Usher. You urge, in your testimony, the U.S. to ratify the OPRC Convention.

Mr. USHER. Yes.

Mr. TAUZIN. How would that help?

Mr. USHER. It would help because we would have an international force available, an information center which is needed to let countries know when they request information as to what is available and to dispatch what can be dispatched in various parts of the world for circumstances where it is needed. This is extremely important. As I had stated in my testimony, no one nation can provide the effort that is needed in a circumstance like that.

Mr. TAUZIN. Mr. Golob, you make a telling point when you talk about the lack of international cooperation in finding revenues to

address the effects of efforts of the conference to raise \$650 million and produced \$10 million.

Mr. GOLOB. Yes.

Mr. TAUZIN. Kind of like the \$6 million we have got raised for this—

Mr. GOLOB. It is a very telling point.

Mr. TAUZIN. A very telling point, and I take it from your testimony you are convinced as I am that we can't rely upon the international community to fund this cleanup.

Mr. GOLOB. Most definitely.

Mr. TAUZIN. We are going to have to count on the U.N. to do its job and extract it from Saddam Hussein's Iraq. Is that right?

Mr. GOLOB. Exactly. And with Security Council Resolution 687, we have a mechanism in place to obtain the compensation from Iraq to help pay for the restoration of the damaged environment in the Gulf region, which includes primarily areas in Saudi Arabia, Kuwait, and Iran. Without that mechanism, it would be very, very difficult to get Iraq to pay the compensation, and we would be chasing Iraq everywhere on the planet.

Mr. TAUZIN. Everywhere! That is right. We have seen the lack of environmental sensitivity as it existed in the Communist East Bloc countries as all those countries began opening their doors to the naked eye of television. We have been told that there is a similar lack of great environmental awareness and sensitivity in the Middle East oil field as compared to oil fields in the North Sea and here in America and elsewhere where there is a lot of attention paid. Is that true? Is that going to be a hindrance to getting the kind of cooperation we need from those who are going to have to put the dollars up front before they are reimbursed? Either one of you. Mr. Usher.

Mr. USHER. I think there had to be something that was left out earlier. Obviously, these companies that had worked from the states that I had mentioned were getting funding from somewhere. I can't verify the actual amount, but there were funds that were provided for these companies, and it was not, obviously, from the two million that was mentioned earlier and the six million that we were disbursing.

Mr. TAUZIN. What you are saying is that the Saudis probably—the Kuwaitis or somebody—

Mr. USHER. Yes.

Mr. TAUZIN [continuing]. Are probably spending some money on—

Mr. USHER. I cannot—

Mr. TAUZIN [continuing]. Evaluations and plannings. Right?

Mr. USHER. No. They were actually for cleanup work.

Mr. TAUZIN. Cleanup work.

Mr. USHER. Now, there is something else if I could correct the record, I would be glad to. We have to remember that there also was ARAMCO, the Arabian oil company, that did provide funding, did provide cleanup—

Mr. TAUZIN. How much? Do you know?

Mr. USHER. I honestly don't. I am sure that we could find out. But I can tell you this; that there were American companies that

were also working for ARAMCO and for the Jubayl—the Royal Commission.

Mr. TAUZIN. Let me concur with you. The information my sub-committee received was that the Saudi government was spending some money either directly or through government-owned ARAMCO for not only cleanup work but for some evaluation and planning for cleanup, and all of that is good. I suppose what I am asking you is how far does that go in light of what we hear about being less environmentally conscious, because those are desert areas, nobody swims on those beaches, nobody goes over there. Don't worry about those attitudes. Is that a real problem as we face the diplomatic chore of encouraging our friends of Saudi Arabia and Kuwait to put some up-front money into the task?

Mr. USHER. As I had said, I think that more awareness has come out of the conflict, that there are more people in Saudi Arabia that are aware of that issue. We must bear in mind that there were spills prior to this one. There was a spill in 1983 in the Iran-Iraq War.

Mr. TAUZIN. Yes.

Mr. USHER. The Narwoo spill. There was a Habash spill in 1981 in which I participated, and the interest level just was not there, just like the interest level was not in the United States prior to January 1967. I had cleaned up oil spills prior to that, but it was only done because of the interest of larger companies that were concerned about their constituents. But in 1967 when the *Torey Canyon* off the southeast coast of England became a reality, that was the mother of the pollution control concerns. And in 1989—

Mr. TAUZIN. I can't believe you use that expression.

Mr. USHER. Well, I have used it before, and what I am going to finish with is that in 1989, the *Exxon Valdez* was the reawakening of that concern. There had been some 12 years where there were very few spills of any public interest and so you have to understand the social impact that a spill may have. I think we are very right in feeling the way that we do. But we must remember that we are in a host country, and the host country has its concerns, and we can only do as much as we can by advising. I am not trying to hold this back, but there are protocols we must adhere to.

Mr. TAUZIN. Well, the concern that I have and I have heard expressed by others is that the very nature of the form of government in Kuwait and Saudi Arabia, lacking the kinds of democratic institutions and response mechanisms that most of the free world have, is itself an impediment to even the growing community awareness from finding proper expression in government funding. Let me say up front the numbers my committee has gathered tell us that Saudi Arabia has spent about \$30 to \$40 million which is a lot more than the two and the six million dollars we quoted earlier, but a lot of that was for vacuum trucks to pick up free oil, and that had an economic incentive as well as an environmental incentive.

I guess I am pleased to see the Saudis made that effort. I'll get back to the real concern that we are going to be hampered in our efforts by the very nature of the governmental process in Saudi Arabia. Can you give us any advice as to how to deal with the difficulties of that kind of society and government where there is not

necessarily as high a level of concern as there might be in a democracy.

Mr. HERTEL. I think we need your advice. The State Department hasn't been able to help us.

Mr. USHER. Well, I will be glad to give it to you, sir.

Mr. HERTEL. Please do.

Mr. USHER. That is what I am here for. I can assure you of one thing, that if the funding is there, and it is released through the mechanism that I have been involved with for these last eight months, they would be used because we had very little problem through the various committees that we would have to go through to get project releases. In other words, when the funds were there, we never found opposition to the work that we had to do or that we asked to do. There were some cases where we couldn't do anything because of the circumstances that the funding was lacking as far as what MEPA—

Mr. TAUZIN. Are you saying that nothing is really going to happen until the Saudis have some source of funding other than their own pocketbooks?

Mr. USHER. Whether it is the Saudis or whether it is the international community. Obviously, we could only do so much with what is at hand.

Mr. TAUZIN. What I am asking you is are you saying that we can't count on the Saudis to provide the funding themselves? Are we going to have to wait for the international community to force that out of Saddam Hussein?

Mr. USHER. Well—

Mr. TAUZIN. Or is there a way to encourage the Saudis to do it up front with the understanding that we are going to do everything we can to get them reimbursed?

Mr. USHER. Well, I think if they were aware of that, they probably would move ahead, you know, at a pace that—

Mr. TAUZIN. If they knew they would get reimbursed?

Mr. USHER. Pardon?

Mr. TAUZIN. If they knew they would get reimbursed?

Mr. USHER. I would assume that would help. Yes. Now, again, I don't know what they would or would not do. I could only tell you what they have done and how they have given us the go-ahead to do the work that we have been doing under the IMO umbrella. And we have had no opposition from the standpoint of the concern to do the work that has been done.

Mr. TAUZIN. Mr. Golob, Greenpeace finally got into Saudi Arabia to go look at the damage which surprised me.

Mr. GOLOB. Saudi Arabia and Kuwait both.

Mr. TAUZIN. And Kuwait. But it surprised me.

Mr. GOLOB. And Iran.

Mr. TAUZIN. Yes. And Iran. Talk about surprise. How do you account for that? Is that a signal that there are those in the Saudi government who can be counted upon as friends in moving the effort to finance a cleanup?

Mr. GOLOB. There definitely are people within both the Saudi and Kuwaiti governments that are very concerned about the quality of the environment within their countries, and they are actively

trying to pursue strategies to clean up the environment and restore the damage to the environment.

Mr. TAUZIN. Are they high enough in the government? And are they high enough in potential success positions?

Mr. GOLOB. They are high enough within their respective governments, but it is a long process. It takes time as we have seen already, and it make take still more time. With respect to Greenpeace, I think Greenpeace received invitations to enter Saudi Arabia and Kuwait. I am not sure whether, as a result of their report, they will receive another invitation to come back.

Mr. TAUZIN. I hear you. Thank you both very much. I don't see any of the Members, Dennis. I will just ask Mr. Usher one final question. Can you provide any details about the Office of Assistance Catalog by the International Maritime Organization? How has that been working as far as offers received, and what kind of services do they cover?

Mr. USHER. Do you mean what did we do?

Mr. HERTEL. Yes.

Mr. USHER. OK. Well, we had a series of 15 projects that we have been doing since April. One of them was Karan Island, another was Markita. Musalamia Bay was a test area where we put up various types of grids for the King Fahd University of Minerals so they could determine with these grids what different types of efforts were employed. It was a typical area. Musalamia Bay was a typical area for mangroves and salt marshes and intertidal areas. There are other projects that we undertook at Tanajeb and mangroves, and others in Adaffi Bay, mangroves as well as filling in the pits that the oil was retrieved out of, and we are doing experimental work, as I say, on various types of methods using equipment that is at hand in the country as well as using some very basic techniques such as the Rototiller I mentioned.

Mr. HERTEL. I want to thank you very much for your advice and for the specifics, and we will be calling on you again in the future for testimony in this area. Thanks, Mr. Usher.

Mr. USHER. Thank you for the opportunity. Bye now.

Mr. HERTEL. OK. Now, for the record, we will introduce Dr. Brent Blackwelder, Acting President, Friends of the Earth, who is accompanied by Mr. Richard Golob, President, World Information Systems, who we have heard from already and appreciate your patience. Dr. Blackwelder.

**STATEMENT OF DR. BRENT BLACKWELDER, ACTING PRESIDENT,
FRIENDS OF THE EARTH; ACCOMPANIED BY RICHARD GOLOB,
PRESIDENT, WORLD INFORMATION SYSTEMS**

STATEMENT OF DR. BRENT BLACKWELDER

Dr. BLACKWELDER. Yes. Thank you very much. We appreciate the fact that you are holding this hearing. I wanted to point out Friends of the Earth is a national environmental organization, but we are part of Friends of the Earth International, which has affiliates in 47 countries. And one of the things which we did was to assemble an independent scientific team of six specialists in desert ecology, wildlife protection, oil spills, air pollution, and public

health, and headed that mission up by former Canadian Ambassador James George to Kuwait, Iran, and other Gulf states.

And one of the members of our team was Richard Golob. I have listed on the back of my testimony the other members because we wanted to bring back to the public the best information we could about the environmental impacts of the war. So I think in response to some of the questions raised earlier by members of the committee, I would say that we as an environmental organization have tried to do our job in calling the public's attention and the Congress' attention to these impacts. We believe them to be extremely serious. We believe we have experienced the world's largest oil spill on sea and the world's largest oil spill on land and that much still needs to be done. In particular, I brought along with me some of the videotape which I would like to show at this point for at least a couple of minutes if I could.

Mr. TAUZIN. You are more than welcome, Mr. Blackwelder. We would like to see it.

Dr. BLACKWELDER. Flyovers from helicopter of the entire Saudi coastline which was hit by the oil spills. You are only going to see a couple minutes. We have four hours of videotape. It is truly mind-boggling that without exception you just see mile after mile after mile of intertidal areas, mangrove swamps, and so on completely and heavily oiled. So we wanted to bring back precisely this visual evidence because people wanted to know: how bad is this. And, in fact, it is almost surrealistic—a view such as this one is.

Mr. TAUZIN. That contrasts rather dramatically with the testimony we just heard from Mr. Usher that it was only in certain areas it was bad, and in other areas it cleaned itself up.

Dr. BLACKWELDER. I would be glad, Mr. Chairman, if you like, to give you the full four hours of videotape and let you decide for yourself. But I think these pictures speak for themselves.

Mr. TAUZIN. You can spare me that pleasure. Thank you.

Dr. BLACKWELDER. It is also interesting to note the volume of oil which has sunk to the bottom as you can see quite clearly here—heavy amounts of oil have gone to the bottom. Here you see where attempts were made to scrape the beach and clean some of the stuff. This attempt here was abandoned because it appeared to be doing more damage than good. But all along there even where the coastline is straight, huge amounts of oil sink to the bottom. Some may rise back up if temperatures are right, and then drift back into the intertidal marshes and so forth. So I think just from these couple of minutes you get an idea of just how seriously the coast was impacted.

I would also just like to show a couple of minutes of the aerial fly over of the oil fires because the pictures are very graphic of the stills and slides, but to see them on video is something else. Here also is a mangrove area which is hit. I am just going to fast forward it now into the oil fire section.

Mr. TAUZIN. Well, when were these pictures taken?

Dr. BLACKWELDER. These were taken in the first part of June, both the flyover the coast and the oil fields. This is a flyover of the northern oil fields of Kuwait. And the videotape illustrates a variety of fires. Many are quite substantially large in scale—several football fields wide so they pose much more serious challenges. And

then repeated lakes and rivers of oil have formed. So as I said before, you are looking at not only a great amount of oil spilled on the water, but we are looking probably at over seven billion gallons of oil spilled on the land and formed ponds, lakes, and rivers.

Mr. TAUZIN. Your estimate was 5,000 times *Exxon Valdez*. Is that right?

Dr. BLACKWELDER. No.

Mr. GOLOB. That was my estimate.

Mr. TAUZIN. That was your estimate, Mr. Golob?

Mr. GOLOB. Right. That estimate reflects the total amount of oil lost in spillage and burning from the well fires in Kuwait.

Mr. TAUZIN. Oh.

Mr. GOLOB. Of the total amount of oil lost, about 100 to 200 million barrels of oil have accumulated on the Kuwaiti fields.

Mr. TAUZIN. Do some quick arithmetic for me. How much is that in comparison to *Exxon*?

Mr. GOLOB. Up to 200 million barrels on land in Kuwait versus 260,000 barrels in the *Exxon Valdez* incident. So the amount of oil on land in Kuwait is up to 800 times greater than the amount lost by the *Exxon Valdez*.

Dr. BLACKWELDER. On the land.

Mr. GOLOB. On the land.

Dr. BLACKWELDER. On the land. So I think the estimates we heard this morning were right. On the water, we are looking 20 to 30 times *Exxon Valdez*. Land is something else, and people have not appreciated the problem that even though progress has accelerated in distinguishing the oil fires, we are still looking at a situation where these oil lakes and rivers of oil will be burning—I mean, will be a problem. Some of them burning now still sitting there causing serious problems. I think you can see—I won't probably run this video much longer, but I want to emphasize again both the flights over the coast and flights over the fields—in this footage. Here you see a flyover of one of the lakes. This rim here is catching on fire, and when those lakes catch on fire, the pollution tends to stay lower to the ground and causes more severe problems locally than the lofting effect from the individual flames that are burning. I will stop this here.

Mr. HERTEL. We will make sure that the other Members of the subcommittees get copies of the video.

Dr. BLACKWELDER. Yes. And so in my testimony, I tried to summarize some of the things which we know about, the environmental damage, but I think rather than—the reason we took the video, I want to emphasize, is to show firsthand exactly how serious our team of independent scientists found it to be. We think the cleanup has gone, unfortunately, much too slowly. We needed a far more aggressive effort earlier in the spring and in the summer, and we could have been a lot further along. Only right now do we find that there has been a much greater number of teams extinguishing the fires and substantial progress is being made now, but a lot of pollution could have been avoided had this been done earlier. In particular, estimates are that as much oil has gone into the Gulf from the air as was spilled indirectly. That particularly severe problem could have been mitigated by quicker action and utilization of the resources which we already had in the Gulf.

I would like just to conclude my statement by saying we put into our testimony, background material about the nature of the Persian Gulf aquatic system. For your reference, we have provided the committee also with some photographs of the area prior to the spills which we have been able to get through our research. And I would turn in conclusion to the question of compensation and claims. We fully concur with the thrust of what Members were saying this morning: that we urgently need to earmark a portion of these claims for environmental restoration. Otherwise, they will come in last place. And so I think in particular the suggestion of the two Chairmen that this be done, we fully support it. We would suggest trying for an earmark perhaps of 25 percent environmental set-aside of that compensation money. It is the only way that things can be accomplished. And we would urge the committee to send a letter to the President, the U.N., and appropriate other entities urging that this set-aside be made. Friends of the Earth would fully support and try to get as many Members of Congress to sign such a letter as possible because without that, I think, well, the environment will come in last place. And the Persian Gulf's recovery will be postponed years and years into the future. Whereas, an aggressive restoration program has a lot of potential.

I just emphasize one of the things that could be done with the restoration plan. There are certain portions of the Gulf and of the desert which have not been damaged. Those sites will be important for recolonization. Areas of mangroves which have not been damaged have to be used to get back what was lost; similarly for desert species. And unless some substantial efforts are taken to protect these areas now and build up the institutions which we have concurred are very weak in Saudi Arabia and Kuwait you have individuals who are very concerned about the environment, but they do not have the political clout within their governmental structures that is necessary. So strengthening their capability, their capacity to manage and run these would be one of the things—at least one of the benefits that could come out of the environmental catastrophe that we are now dealing with.

[The prepared statement of Dr. Blackwelder can be found at the end of the hearing.]

Mr. HERTEL. We will do a letter, but we would also like your support in introducing a House resolution which might obtain not only more co-sponsors but have more of an effect if we can put the House on record for earmarking.

Dr. BLACKWELDER. We would fully support that.

Mr. HERTEL. Mr. Goss. Oh, Mr. Chairman. Mr. Tauzin.

Mr. TAUZIN. First of all, Mr. Blackwelder, in terms of the complaints we have heard today about lack of international attention and lack of involvement by the environmental community, can you quickly give us an idea of what the international environmental community is doing to mobilize its own resources to gain more attention to the problem?

Dr. BLACKWELDER. Well, I would say first if we look at the situation within the United States that I pleaded with my colleagues in other organizations to say more about the environmental problems. Unfortunately, very few groups have chosen to do that. Earth Trust has made excellent video footage and Friends of the Earth in

the United States and Friends of the Earth International have, but unfortunately, I would agree with the committee, there has been a real silence, and I think it is tragic. We would definitely not, on our doorstep, allow this to happen to the Gulf of Mexico, talking about a slick that would cover the entire coast of Florida. We wouldn't tolerate that.

Mr. TAUZIN. Yes. That is my impression too, and I suppose as we have asked for advice on how to generate some enthusiasm in Saudi Arabia and Kuwait and its government and its society for more action. How can we help you galvanize a little more attention from the environmental community? I realize we are limited in that regard, but what can we help you do?

Dr. BLACKWELDER. Well, yes. I would say two things. One is that you certainly could give us a letter of commendation for what we have done, and, second, you could ask other groups who haven't done something why haven't they and what is their judgment as to what priority ought to be given to this. Will they support such a resolution as you two Chairmen intend to introduce?

Mr. TAUZIN. It would be very helpful if you could assist the committee in that regard by giving us some idea about who, internationally, we ought to reach with those kinds of requests.

Dr. BLACKWELDER. We would be happy to do so.

Mr. TAUZIN. We would deeply appreciate it. In that regard, you heard me talking with Mr. Golob about the Chernobyl reference and how there was a lack of interest in the international community in giving money to repair the damage. I suspect part of the problem is the Soviets have been very sensitive about anybody messing around with their nuclear facility and its effects. We just saw it again with another fire there. Is that going to be true here too? Do you suspect that there is some reluctance to offend the Saudis and Kuwaitis in the international community by not pushing harder?

Dr. BLACKWELDER. Well, I think on the contrary we have an obligation to support the people in those governments who are deeply concerned about this, and our failure to get out in front and speak on their behalf is hurting them. Our Friends of the Earth International team went over at the invitation of the Saudi National Commission for Wildlife Conservation and Development, and we went into Kuwait at the invitation of the Kuwait Environmental Protection Council. So we ought to be supportive of those individuals through our actions.

Mr. TAUZIN. You might, if you will, volunteer some advice to us there. Is there something we should be doing to both encourage and bolster the efforts of those inside Saudi Arabia and Kuwait who have been willing to express strong support for action?

Dr. BLACKWELDER. Yes. I would suggest that we could perhaps send a letter to the committee outlining the individuals in those institutions who have been most helpful and the roles that they have played, and I think letters from the committee encouraging them in ways might be appropriate in indicating your support for greater environmental cleanup. That would be of great benefit for them to know that. I would also—

Mr. TAUZIN. If you would be kind enough to identify those too.

Dr. BLACKWELDER. Yes. We have an entire list, and I think—

Mr. GOLOB. I also would say that one thing that would be of great benefit especially to the Kuwaiti government would be strong support on the part of the U.S. representative to the Governing Council of the Claims Commission in Geneva to help ensure that environmental issues become a priority issue in the claims procedure.

Mr. TAUZIN. Well, you have heard my own suggestion of urging the set-aside, and we intend to follow that through with—

Mr. GOLOB. But even above and beyond that, attention must be focused on what is the definition of environmental damage. Is it just business losses due to environmental damage? Is it the lost value of the natural resource while it is damaged? Does it include public health damages that result from the polluted air? In addition, another major issue concerns what the rules of evidence will be in determining what an environmental damage is. Because there has been so little funding for damage assessments to date, much of the damage is disappearing. It will be very difficult to collect the data to define the damage that has occurred.

Mr. TAUZIN. Well, we are now facing a contradiction. Maybe you can give us some advice. On the one hand, we are told if we allow all those considerations to proceed toward funding for the cleanup, the lawyers, the bureaucrats, and the diplomats are going to tie us up for years on issues about where compensation should be included. On the other hand, you make a strong case that those efforts should proceed.

My impression is that we could be most helpful now by trying to separate all that procedure and legalism from the single issue of putting money up front to clean the mess up quickly. Do you disagree with that?

Mr. GOLOB. I think that the idea of a set-aside is excellent and would be much appreciated by the governments in the region. I think at the same time instead of moving forward in series, you can be moving forward in parallel on these two issues. But I would reiterate that, if you can follow through on the set-aside, that would be excellent.

Mr. TAUZIN. Mr. Blackwelder, do you have a comment on that?

Dr. BLACKWELDER. I think moving in parallel would be good because I agree with you. The set-aside is crucial. If we don't get that, then we are in last place, and none of this will get done. And I think to help through the legalisms simply enumerating the kinds of damages, loss of fisheries, destruction of coastline, loss of mangrove swamps, those should be itemized as things which count as damaged and the cost of rehabilitations—those things. And if they are enumerated, then there is less opportunity for lawyers to say they weren't intended in the language of the U.N. resolution.

Mr. TAUZIN. Yes.

Dr. BLACKWELDER. Another point I wanted to make—

Mr. TAUZIN. The importance is that in this claim procedure, I guess, it is not just individuals who have suffered the loss.

Dr. BLACKWELDER. It is what?

Mr. TAUZIN. It is not just individuals.

Dr. BLACKWELDER. That is correct. Much of it is public domain.

Mr. TAUZIN. What you have is that they are only going to allow individual claims to come in. Is that right?

Mr. GOLOB. Well, no. Initially, the Claims Commission has issued procedures for individuals to submit claims, but earlier, Mr. Colson from the State Department had said that individuals, businesses, and governments—

Mr. TAUZIN. And governments.

Mr. GOLOB [continuing]. Would be allowed to submit environmental claims, and upon reflection, I believe that Mr. Colson's comment is inaccurate simply because the types of natural resources that are damaged in the Gulf—the desert, the sea, the beaches, and the fish—are natural resources held in public trust by the governments, and so that only the government would have standing to bring forward a natural resource damage claim for those types of damages. In addition, it would be far beyond the wherewithal for any individual or business to have the money to undertake the necessary damage assessment for natural resource damages.

Mr. TAUZIN. Sure. And finally, if cleanup does not occur, I have been told by people in the know that the heat from the desert and the Sun, and the effect of the tides can reinject the oil back into the water column and continue doing damage for years to come. Is that accurate? Or is that something that is exaggerated? Either one of you.

Mr. GOLOB. There is definitely a potential for reoiling along the coastline, and that is one reason why if you are going to undertake a coastal cleanup, you usually go after the entire contaminated coast and not just parts of it. If you clean segments of a coastline and leave other segments oiled, over time the oiled area will eventually recontaminate the cleaned area.

Mr. TAUZIN. Remigrate. Gentlemen, thank you very much. Mr. Goss, I think I have used up much more of my time. I apologize.

Mr. Goss. Thank you very much, Mr. Chairman, and the other Mr. Chairman. I think the time is well used, and I apologize to both of you for not being here. I would much rather have done this today than my committee mark-up in another committee because this is an area where I think there is urgent attention. You have made the case well. The one question I wanted to ask, and I apologize if I am going over ground that has been covered is whether or not we have any kind of assurances from the witnesses on the first panel from the Department of State particularly that they will proceed with some of the ideas particularly with the U.N. which is the action arm of this program at this point in making representation so you know the U.N. has considered allowing the Iraqi oil stream to flow again. The idea of any revenues from that going for humanitarian needs for food and shelter. What I was wondering has representation been made that we might add to that list the environmental need based on the type of evidence that these gentlemen have shown us so graphically?

Mr. HERTEL. We have discussed that, Porter. The problem is today that the gentleman from the State Department was representing Oceans and Fishery—

Mr. Goss. I understand.

Mr. HERTEL [continuing]. And we had Members of your side criticize the Administration and State Department for not pushing harder. Let me just lay it out the way I see it, and then ask these gentlemen if they can help us and have us offer suggestions.

It seems to me that the Saudi Arabian government does not have a priority on this type of a cleanup. We could have more hearings on it, but it is just not a priority even though it is on their coast.

The State Department has not been aggressive. They have not made the cleanup of the Persian Gulf a priority. That seems very clear to me. They have other issues they are concerned about, so I think that it is up to the rest of us.

First, I would offer that we would like to host your video for other Members of Congress and their staffs. We can pick out a day, we can send out the invitation, hopefully do it in this room or larger room, and I would like to ask that you try to get other environmental groups to join with you on this issue to heighten the awareness of this environmental crisis.

Secondly, I would ask that the environmental groups use their international contacts; not only in the countries in the Gulf region, but all over the world. At the same time, I ask that members of your various organizations would write to Congress and to the President encouraging them to appropriate funds cleaning up the Gulf.

And, finally, as I said before, we would write a letter, to the United Nations supporting the earmarking of funds. We will introduce a resolution in the House calling for the earmarking of these funds and accelerated priority of this kind of a cleanup. So I think we could agree on all of these things and pursue them within the next month.

Dr. BLACKWELDER. Yes. We fully support all those steps and commend you for initiating them.

Mr. HERTEL. What we have been trying to do around here is not just have the hearings and leaving things lay, but even if there is not specific legislation to move ahead beyond just having a hearing.

Mr. GOLOB. And of course, now is the time to move forward with the Claims Commission because it is in the process of developing the procedures. If there is any delay, many of the procedures will be in place, and it will be very difficult to change them. So the time is now to lobby hard.

Mr. TAUZIN. One thing that will help us understand what has happened, Mr. Blackwelder, did any of the environmental groups that Friends of the Earth contacted give you reasons why they weren't interested in joining you in this international effort?

Dr. BLACKWELDER. In terms of earlier in the year they thought raising questions about environmental impacts would put them at odds with their membership because it implied taking a position one way or another on the war, and it seemed to me the war was over very quickly, and after that time, those issues—I mean, you could have a legitimate debate about whether we should have used force or not used force. OK. But after that time is over when the damage is done, I can't see why everyone was not fully four-square in favor of fast cleanup as quickly as possible.

Mr. TAUZIN. Are you saying that it is a holdover of that diversity of opinion on the law?

Dr. BLACKWELDER. I think that it stems from that, but I don't see the legitimacy in—

Mr. TAUZIN. I don't either, but you are explaining it the way you think?

Dr. BLACKWELDER. Yes. I think so. Now, I would say our Friends of the Earth International affiliates have tried to do a good job of publicizing the environmental damage and in trying to get greater U.N. participation and participation from their countries, and I would cite Friends of the Earth, Netherlands, and Friends of the Earth, Italy, for having very successful publicity and pressure on their governments to do more. So we have had a little bit but nowhere near what I had hoped for.

Mr. TAUZIN. Questions again, Mr. Goss?

Mr. GOSS. Mr. Chairman, may I ask a follow-up on Mr. Tauzin's—

Mr. HERTEL. You may.

Mr. GOSS. Thank you very much. I want to make sure I understand you. Surely, there could be no controversy about who torched the wells. That is not debatable, is it?

Dr. BLACKWELDER. The overwhelming evidence suggests that the vast majority of these wells had to have been deliberately sabotaged. There may have been some fires that were set by bombing by the allies, but it seems that there is no doubt that the vast majority would have come from deliberate—

Mr. GOSS. Well, is anybody even making the argument—

Mr. GOLOB. No.

Dr. BLACKWELDER. No.

Mr. GOSS [continuing]. That it is not Saddam Hussein? It seems to me then that we ought to be over any type of resistance on that point. We are dealing here now—the people who are committed to the environment, and we can point fingers all day long about the war and this and that and what broke down and what didn't, but we can point fingers on the environment. It is there. It is in front of us. It is a mess, and we have all got to pull together to do something. So if you are having resistance in that area with any of the communities, I would certainly like to have the opportunity to address some of those groups.

Mr. GOLOB. I think the problem becomes then that they have to confront the reason why they didn't decide to move forward on this issue in the first instance, and as Dr. Blackwelder has said, the environmental organizations probably decided not to get involved in the Gulf issue because the environmental position is, basically, a peace position.

Mr. GOSS. I understand that, but we have peace. Let us hope we continue to have peace there, and now we have a mess. And they are separate things. Has the environmental community put any pressure on the Senate side amongst our colleagues over there to give us the complimentary legislation to our H. Con. Res. 57, which was, basically, to send the bill to Saddam legislation on this that we have passed in this House in March? And I believe the Senate has not yet acted on it despite our urging.

Dr. BLACKWELDER. We have testified twice before the Senate Environment and Public Works Committee on the Gulf so we have urged, basically, all of the things which we have urged today to that body, but I do not think they are anywhere nearly as far along as you are with your recommended set of actions.

Mr. TAUZIN. Well, that is not unusual.

Dr. BLACKWELDER. But I would say that I fully intend to carry that set of recommendations and push them to do a complementary set of actions parallel to what the House Merchant Marine and Fisheries Committee is going to be doing.

Mr. GOSS. Thank you, Mr. Chairman.

Mr. HERTEL. We commend both of you for being here and for taking an entire day to be with us. We appreciate your advice, and we will work with you. We need more people involved in this issue. I think we will just invite more people to participate.

Dr. BLACKWELDER. In fact, I would say one way of doing that would be to send the groups the resolution and ask for their endorsement of your resolution, and that puts the ball in their court.

Mr. HERTEL. We will get the resolution out. We will then set a date for more people to see the video.

Mr. TAUZIN. One final thought as we bring this joint hearing to a wrap. It is my understanding that the Saudis have a goal in terms of their food needs. They have been working on this for a long time, and major U.S. corporations have been involved with them in self-sufficiency with food. One of their goals in this is self-sufficiency in seafood, because seafood is becoming increasingly popular in the Middle East and particularly in Saudi Arabia and Kuwait. They now take 50 percent of their seafood from the Gulf of Arabia, and a large part of the 50 percent they import comes from countries who fish in the Gulf of Arabia. They depend upon that Gulf, and if their ability to achieve self-sufficiency in seafood as part of their overall national strategy is going to succeed, then cleanup and restoration are extremely important. And so there is a great and important self-interest to be served in the Saudis cleaning up the mess that Saddam Hussein caused upon their shores and the shores of Kuwait. I would say again and urge those within earshot that our goal is to help our friends to achieve their own self-interest in cleanup, recognizing that they did not cause this. But they have a lot to gain by energetically beginning the effort with our help to achieve a full and final cleanup. I want to thank you both for the efforts you make. Mr. Blackwelder, let me say it again, our thanks go to you, the Friends of the Earth, for being a leader here.

Dr. BLACKWELDER. Thank you.

Mr. TAUZIN. You were correct in reminding us that you need to be commended, and we will encourage you in your work. Thank you very much.

Mr. HERTEL. Thank you very much. We have one last announcement from Dr. Sylvia Earle from NOAA who testified this morning.

Mr. GOLOB. Mr. Chairman—

Mr. HERTEL. Yes.

Mr. GOLOB [continuing]. If I could just ask one question?

Mr. HERTEL. Mr. Golob.

Mr. GOLOB. Even though I haven't presented my testimony—

Mr. HERTEL. Don't ask us questions. That gets pretty difficult.

Mr. GOLOB. Even though I haven't addressed my testimony in my comments, will it be part of the record?

Mr. HERTEL. Yes. Your testimony and the doctor's will be part of the record, and we will mention that the video will be part of the record. Dr. Earle.

[The prepared statement of Mr. Golob can be found at the end of the hearing; the video can be found in the subcommittee files.]

Dr. EARLE. Yes, Mr. Chairman and Members of the committee, I am pleased to convey to you the information that NOAA is actively exploring the ways and means of sending one of our ships to the Gulf early in 1992 and this would be channeled through the Intergovernmental Oceanographic Commission, IOC, and would be working, of course, with the Gulf nations and the scientific community there as well as with other agencies in the United States. The goal is to evaluate and conduct research on the environmental aftermath. We are proposing something on the order of a three-month expedition which would make a very pleasing counterpart, 100 days of scientific research. NOAA is doing this through reprogramming within our fleet operations delaying for a short time some of the ongoing survey work. We are proposing the *R/V Mount Mitchell*, one of our Class II vessels. This will require some additional funding but not a great deal.

There is already some encouraging information from the governments in the Gulf region for possible complementary support. We are hoping that with very little additional costs we can have a maximum impact in a very favorable way to achieve some of the goals that we have discussed here this morning and today. Thank you.

Mr. HERTEL. Thank you. I think we all like the idea of 100 days of a scientific research expedition. While it is important to the Gulf, our country will learn from the Gulf situation and be prepared for any future disasters we might have on our coasts. I thank you for the timely answer.

Dr. EARLE. We would like to provide, of course, a more complete response and will do so in writing.

Mr. HERTEL. We might have more questions for you and the other panelists for the record. Thank you very much.

Mr. GOSS. Mr. Chairman——

Mr. HERTEL. Yes.

Mr. GOSS. May I ask Dr. Earle that I would like that a very close tabulation of the costs of this are kept. You mentioned some funding. I would like to know what the total cost of that is going to be, and then I am very sincere when I say that bill should be packaged up and sent to Mr. Saddam, and I expect him to pay it.

Mr. HERTEL. Thank you very much. The hearing is adjourned.

[Whereupon, at 3:20 p.m., the subcommittees were adjourned and the following was submitted for the record:]

TESTIMONY OF
DR. SYLVIA A. EARLE
CHIEF SCIENTIST
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

BEFORE THE

SUBCOMMITTEE ON OCEANOGRAPHY, GREAT LAKES,
AND OUTER CONTINENTAL SHELF
SUBCOMMITTEE ON COAST GUARD AND NAVIGATION
SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION
AND THE ENVIRONMENT
COMMITTEE ON MERCHANT MARINE AND FISHERIES
HOUSE OF REPRESENTATIVES

OCTOBER 17, 1991

Mr. Chairmen and Members of the Subcommittees:

I am honored to be here this morning to discuss the role of the National Oceanic and Atmospheric Administration (NOAA) in the Arabian Gulf before, during, and after Operation Desert Storm.

I am pleased to report to this task force that NOAA dispatched its world-class scientific talent quickly, delivered accurate information and informed advice to the highest levels of the U.S. government on a timely basis, and successfully collaborated and coordinated our activities with a host of foreign governments and international agencies. Today, the gradual healing of this regional environmental catastrophe continues. In the future, NOAA will continue to support clean-up efforts as long as we are wanted and we can be of help to the host nations.

NOAA actively participated in the Allied Coalition's response to both wars initiated by Saddam Hussein. First, NOAA lent technical support to Coalition forces fighting Saddam Hussein as he launched his aggression against the people of Kuwait and neighboring states; next, we mobilized our scientists to help reverse the devastating impact of his revengeful war on the region's fragile desert and marine ecosystems.

Before I elaborate on NOAA's corporate contribution to Operation Desert Shield and Desert Storm, I should mention that 25 NOAA men and women were activated by their military reserve units to serve either in the theater of combat or here at home. They honorably represented their nation and this agency. I applaud every one of them for their sacrifice and dedication and all of those who supported their efforts throughout the NOAA organization.

NOAA's initial response began in August, 1990, shortly after Iraq invaded Kuwait. NOAA's Coast and Geodetic Survey was enlisted by the Defense Mapping Agency to assist in producing regional maps for possible use by ground combat forces. As a result, almost 658,000 copies of maps were produced in less than three months, as NOAA technicians worked a special night shift to complete the assignment.

Accurate and timely weather forecasts were critical to the success of the Coalition air and ground campaigns. NOAA's National Weather Service (NWS) arranged for the emergency activation of a telecommunications circuit with the Saudi Arabian

Meteorology and Environmental Protection Agency (MEPA). This made possible the receipt of critical observation data from scores of neighboring and distant countries where critical greater Gulf weather systems originate and pass through. This data was supplemented by the direct observations of military meteorologists in the field. Additional information was also provided by the National Meteorological Center.

All the data was relayed to the United States Air Force (USAF) Global Weather Central at the Offutt Air Force Base. This weather data was vital in the effort to plan and execute successful Coalition bombing sorties over Iraq and, later, in ground combat operations. I would like to submit for the Record a copy of a letter received by Dr. Joe Friday, Assistant Administrator for NOAA's Weather Services, from Air Force Colonel William S. Koenemann, Commander of the 5th Weather Wing at Langley Air Force Base, acknowledging the significant role of NOAA's Weather Service in assisting military meteorologists.

NOAA's National Environmental Satellite, Data and Information Service (NESDIS) also provided timely weather-related satellite information to the Department of Defense and the Saudi Arabian Government. As a result of the increased demand for satellite coverage of this region, NESDIS was tasked with scheduling additional overhead coverage while maintaining NOAA's routine operational requirements. On short notice, NOAA's Fairbanks, Alaska ground station scheduled the polar orbiting

satellites to maximize coverage of the Arabian Gulf region, thereby providing near real-time data to the U.S. Government user community. Over 900 images from NOAA-10 and NOAA-11 satellites were expeditiously made available to DOD and other key agencies. Mr. Chairman, I would, again, like to submit for the Record a letter from Navy Commanding Officer T. E. Callahan thanking NOAA for "full spectrum support actions (which) were critical to the development of our environmental forecasts."

After receiving an urgent request from the Air Force, NESDIS purchased a portable Search and Rescue (SARSAT) ground station for immediate use in Saudi Arabia. This system was procured, shipped, installed at Riyadh, and training completed in a matter of weeks. According to the Air Force, SARSAT helped provide the communications channel to identify the name and unit of one downed pilot. It also was used in verifying conflicting technical information of importance to combat rescue operations.

Because of this outstanding effort, the four NOAA personnel involved with this activity were awarded the Department of Commerce Bronze Medal last month. Mr. Chairman, I would like to submit for the Record separate letters praising NOAA for this effort from Air Force Major General Frank E. Willis and Air Force Deputy Assistant Secretary Lloyd K. Mosemann II. Mr. Mosemann said: This is a "classic case for how two agencies can work together to meet an operational requirement in minimal time and provide a system that could prove instrumental in saving lives."



DEPARTMENT OF THE AIR FORCE

 HEADQUARTERS 5TH WEATHER WING (MAC)
 LANGLEY AIR FORCE BASE VA 22055-5000

28 January 1991

 RECEIVED
 3:00
 FEB 4 1991

 Executive Affairs
 NWS-NOAA

RECEIVED

FEB 6 1991

NOAA-NWSOSO

 Dr. Elbert W. Friday, Jr.
 Assistant Administrator for
 Weather Services
 Silver Spring, MD 20910

Dear Dr. Friday

Since August 1990, we have been participating in Operations DESERT SHIELD/DESERT STORM. As the "lead" wing for Air Weather Service, we had the mission of establishing an operational and functional weather support force for Southwest Asia operations.

One of the major hurdles we faced was the establishment of a dedicated communications link from the Saudi Arabian weather central to the Air Force Global Weather Central. This was a major undertaking and resulted in a number of false starts as we chased leads here and in Saudi Arabia. It wasn't until Lt Col Lloyd Irvin, a USAF reservist assigned to your office, got involved that we began to see progress. He understood the problem and became proactive on our behalf. Thanks to his hard work and that of James Fenix, Daniel Starosta, and Roderick Bell, Jr.--all assigned to your Systems Operation Center, the circuit was brought on-line in short order.

Installation of this circuit ensured the timely receipt of data needed to support the production of tailored forecast products for our combatant forces. Also, it significantly reduced the workload on our theater forecast unit which allowed them to concentrate on other priority duties in support of US and allied forces.

Please extend my sincere thanks to Lt Col Irvin, Mr. Fenix, Mr. Starosta, and Mr. Bell for the much needed assistance they provided. Their professionalism and commitment were very much appreciated and helped immeasurably in our mission accomplishment.

Sincerely

William S. Koehnemann
 WILLIAM S. KOEHNEMANN, Colonel, USAF
 Commander



DEPARTMENT OF THE NAVY
 COMMANDING OFFICER
 NAVAL POLAR OCEANOGRAPHY CENTER
 4301 SUTLAND ROAD
 WASHINGTON, D. C. 20385-5180

IN REPLY REFER TO

3140
 Ser 341/JCJ
 JUN 19 1991

From: Commanding Officer, Naval Polar Oceanography Center
 To: Assistant Administrator, National Environmental Satellite,
 Data, and Information Service, National Oceanic and
 Atmospheric Agency

Subj: LETTER OF COMMENDATION

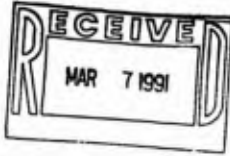
1. The Satellite Operations Control Center is to be commended for its impressive and timely environmental satellite support during Operations DESERT SHIELD and DESERT STORM from August 1990 to the present.
2. Your responsive, full spectrum support actions were critical to the development of our environmental forecasts. These forecasts were used extensively in planning and tactical decision making in direct support of theater operations. Most noteworthy was your response in rescheduling the LAC coverage for areas of interest and ensuring regions of interest consistently remained within the coverage of the satellite. Messrs. Gary Davis, Chuck Liddick and Tom Snell and countless others maintained a vigilant watch over the concerns of the Navy and provided us with vital products.
3. Your outstanding professionalism, rapid response to requests and flexibility enabled us to provide the best environmental support possible to units operating in the region. Thank you for your support and congratulations on a job WELL DONE!

T. E. CALLAHAM

Copy to:
 NAVDEPNOAA
 COMNAVOCEANCOM



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS MILITARY AIRLIFT COMMAND
SCOTT AIR FORCE BASE, ILLINOIS 62225



15 February 1991

Mr Thomas N. Pyke, Jr.
Assistant Administrator for Satellite
and Information Services
NOAA/NESDIS E
US Department of Commerce
Federal Building #4, Room 2069
Washington DC 20233

Dear Mr Pyke

Please pass on my thanks to Mr Russell R. Vollmers or your SARSAT Operations Division (E/SP3) for his outstanding help. Mr Vollmers displayed exceptional dedication and tenacity in all phases of the acquisition and shipment of the Mobile Local User Terminal (LUT) for HQ MAC. This LUT is now installed, tested, and operational in the DESERT STORM area of responsibility (AOR)--in no small measure due to Mr Vollmers' professionalism.

Mr Vollmers was invaluable in getting critical LUT equipment to the AOR after the equipment failed to make the commercial flight with the contractor's personnel. He coordinated the effort to get approval to "DESERT EXPRESS" the equipment via a MAC flight from Charleston AFB, South Carolina. In spite of illness, he drove to Charleston overnight to handle the details of the shipment. As a result, the contractor was able to meet the original installation and test schedule, and the LUT was available to help save lives before the start of Operation DESERT STORM.

You are fortunate to have such a capable man as Mr Vollmers. His skill at coordinating and planning helped in every stage of this effort, from specification through contracting, to supporting the installers.

Sincerely

FRANK E. WILLIS
Major General, USAF
DCS/Requirements



DEPARTMENT OF THE AIR FORCE
WASHINGTON DC 20330-1000

OFFICE OF THE ASSISTANT SECRETARY

22 JAN 1991

Thomas N. Pyke, Jr.
Assistant Administrator for Satellite and Information Services
National Oceanic and Atmospheric Administration, Room 2069
Washington, D.C. 20233

Dear Mr Pike,

NOAA's acquisition of the mobile local user terminal for use in the Desert Shield Area of Responsibility was absolutely first class. It is a classic case for how two agencies can work together to meet an operational requirement in minimal time and provide a system that could prove instrumental in saving lives.

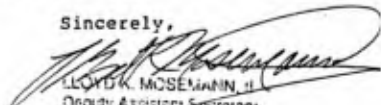
The project officers worked closely without concern for attribution of credit and the result was a LUT/MCC installed prior to the outbreak of hostilities in the Persian Gulf. Although the equipment was installed in a "fixed" configuration, an option was provided to mobilize the LUT at a future time. There was also flexibility among the team as demonstrated when part of the equipment had to be shipped by military airlift when commercial airlift was delayed. In spite of the delay, installation and training deadlines were met.

I know you are well aware of the calibre of your people, but it is necessary to single out a few for their individual efforts. Mr Russ Vollmers of the NOAA/NESDIS SARSAT Operations Division worked far beyond what could reasonably be expected. His technical knowledge of LUT/MCC operations filled an experience void in the Air Force and he kept the project focused from requirements definition through commissioning/acceptance.

The NOAA contracting officer, Ms Judy Corwin, was key to the success of the contract itself. Mission oriented, she didn't allow the acquisition to become bogged down in the bureaucracy quagmire we so frequently have to deal with. She was also flexible enough to satisfy the requirements of both NOAA's and Military Airlift Command's contract award process.

Please accept my sincere appreciation for your personal involvement as well as the NOAA team in fielding the LUT.

Sincerely,


 LLOYD K. MOESMANN, JR.
 Deputy Assistant Secretary
 Communications, Computers &
 Logistics

The full-scale start of the second war -- the war against the environment -- occurred almost in tandem with the start of the Coalition air campaign -- when over 780 oil wells were set ablaze and damaged by Iraqi troops and an additional 6 to 8 million barrels of oil were dumped by Iraq into the Gulf. About 6 million barrels of oil per day initially burned or spilled onto the desert environment. About 525 wells have now been capped. Experts are continuing to stanch the flow of oil at an average rate of 5 to 6 wells per day and it appears that Kuwait's long ordeal with "black rain" may be over by December or early next year--well in advance of earlier estimates.

NOAA has undertaken several major initiatives to help evaluate and control the environmental damage, including:

- 1) The reconstruction of Kuwait's weather service
- 2) Impact analyses of the oil fire plumes
- 3) Oil spill damage assessments
- 4) Fisheries inspection
- 5) International collaboration
- 6) Establishment of Arabian Gulf Office
- 7) Data collection and dissemination

REBUILDING KUWAIT'S WEATHER SERVICE

NOAA assisted with the reconstruction of Kuwait's weather monitoring and forecasting abilities that were destroyed by the Iraqi Army. NOAA's National Weather Service coordinated the

reestablishment or reconstruction of the Kuwaiti wind-finding radar operation, the surface observations at the Kuwait airport, the upper-air observation program, and the maintenance facilities. Additionally, NOAA oversaw the installation of an interim communications system for Kuwait to transmit observations onto the Global Telecommunications System.

OIL FIRE PLUMES

Providing damage and impact analyses of the oil fire plume was an important task for NOAA. The extent of the health effects and environmental damage to the region caused by oil fire plumes was not known when hostilities ceased. But vital information was again provided from the outset by NESDIS which produced enhanced imagery and associated technical interpretation of the data from the NOAA Landsat and French Spot Image satellites.

At the request of the U.S. Ambassador to Saudi Arabia, an Interagency Air Assessment Team was formed by the United States Environmental Protection Agency with NOAA participation, and dispatched last March to assess the potential health risks of the fires. Smoke plume distribution maps were provided on a daily basis and NOAA's most advanced research models were used to provide meteorological guidance for areas potentially most affected by the plume.

NOAA subsequently assisted Kuwait in the construction of an early warning system to predict the trajectory of these oil fire smoke plumes. Fifteen solar-powered meteorological towers were

erected by personnel from NOAA's National Weather Service and the Air Resources Laboratory. The towers provide real-time meteorological information which help predict occasions when high concentrations of noxious smoke might be expected to engulf downwind population centers. This system, fully operational for several weeks, is an integral part of the Kuwait Health Plan developed with the assistance of the U.S. Public Health Service. It should provide important information to warn of changes in the wind or oil fire plume patterns which would heighten the health risk to exposed populations.

Following-up on its earlier work, NESDIS continues to process cloud, hot spot, and smoke plume images from the NOAA polar satellites and the European METEOSAT satellite. Additionally, whenever satellite photographs of the plume are available, NOAA interprets, summarizes, and distributes them along with the plume forecasts. Trajectory and plume forecasts are produced every twelve hours.

Within the U.S. effort, the National Science Foundation undertook an extensive aerial monitoring effort in May and June conducted by the University of Washington and the National Center for Atmospheric Research (NCAR). In July and August, a team of Department of Energy researchers monitored the effects of long-range transport on upper level plume chemistry and solar radiation on the plume at the ground level. A helicopter team

from the National Aeronautics and Space Administration and EPA this summer also sampled the plume at close range to further understand its chemistry.

SPILL MONITORING

As mentioned earlier, the Iraqi war against the environment included the deliberate release of an estimated 6 to 8 million barrels of crude oil into the fragile Gulf waters. This is up to 32 times the magnitude of the Exxon Valdez spill in Prince William Sound. In response, President Bush, in January, dispatched a U.S. Interagency Assistance Team led by the U.S. Coast Guard to Saudi Arabia. NOAA's Hazardous Materials Response Branch (HAZMAT) provided over 15 civilian, NOAA Corps and contractor specialists to assist that team with aerial reconnaissance, oil spill movement predictions, and ecological assessments. The spill movement forecasts were provided by NOAA to U.S. agencies and to the Government of Saudi Arabia and the Saudi Arabian Oil Company (ARAMCO) twice a day.

From January through March, NOAA's Weather Service detailed six meteorologists to assist countries in the Arabian Gulf in tracking and mitigating the effects of the spill. Three of the meteorologists provided detailed weather analyses and forecasts that contributed to the production of oil spill trajectory forecasts. Every 12 hours they analyzed observations from meteorological satellites, overflights, and surface reports and

studied atmospheric model forecasts from NOAA to prepare forecasts of wind speed and direction at numerous significant points for periods throughout the following seven days.

It soon became apparent that there was major damage to salt marshes, tidal flats, beaches, mangrove swamps and the resources of those areas. Over 10,000 seabirds died because of the spill.

FISHERIES

The adverse impact of the spill on Gulf fisheries was another major health concern. To address that issue, NOAA's National Marine Fisheries Service (NMFS) joined with the Food and Drug Administration on a regional mission to assess the impact of the spill on marine resources, especially seafood safety concerns. The team learned that a major shrimp fishery off the northern Saudi coast had been voluntarily closed by the Saudi Fishing Company and subsistence and artisanal trap fisheries abandoned. The shrimp fishery off Kuwait has been eliminated due to the loss of boats and gear, physical oiling, and concern for mines and other unexploded military ordnance. The team also learned that there was a major need all along the Saudi coast to develop the capability to assess the scientific value of the numerous fishery habitats in order to fully assess the catastrophic impact of these oil spills. In fact, scientific information is lacking on most of the habitats that is necessary to judge the extent and long-term impact of this or any future

oil spill on the biological productivity of the coastline. Therefore, upon returning to the United States, NMFS scientists developed a scientific proposal to use its scientists and those from the NOAA Sea Grant Colleges to train local Saudi scientists in specific habitat monitoring, habitat assessment and restoration, and seafood safety inspection techniques.

Team members also visited neighboring Bahrain where over 53 pounds of shrimp and finfish are consumed annually per capita. Bahrain has not yet experienced direct oil impact, but consumers were concerned about possible contamination of seafood products. The Bahrain government has no analytical means to determine if products have been affected. NMFS scientists held discussions with Bahrainian scientific personnel and provided publications on the most up-to-date techniques for seafood safety inspection and techniques used in the United States for assessing the ecological value of fishery habitats.

INTERNATIONAL COLLABORATION

NOAA has been very active in collaborating with the international community. Various specialized agencies of the United Nations, under the coordination of the United Nations Environmental Program (UNEP), have organized the international response to the oil fires and spills. The Regional Organization for the Protection of the Marine Environment (ROPME), the local arm of UNEP, participated in the development in April of the UN Interagency Action Plan.

Participation in the Interagency Plan includes: the World Meteorological Organization (WMO) --for activities responding to the oil fire plumes; the Intergovernmental Oceanographic Commission (IOC) --for activities responding to the environmental impacts of oil spills; the International Maritime Organization (IMO) --for activities relating to oil spill clean-up; and the World Health Organization (WHO) --for activities responding to the health impacts of the fires and spills.

Within the U.S., the Policy Coordinating Committee on Oceans, International Environment and Science (PCC), chaired by the Department of State, has the responsibility to oversee U.S. efforts to assess the environmental impacts from the Kuwait oil well fires and oil spills. On May 17, 1991, the PCC agreed to support fully the UN response and to integrate U.S. efforts with the UN program. NOAA assumed the lead in coordinating U.S. efforts in support of the atmospheric aspects of WMO/WHO activities in Kuwait and Saudi Arabia.

ARABIAN GULF PROGRAM OFFICE

In response to the PCC action, the Arabian Gulf Program Office was established within the Office of the Chief Scientist of NOAA. Collaborating with the UN, Arabian Gulf Program Office field units were established in Kuwait, Saudi Arabia, and Bahrain to assist in program implementation and coordination, and to provide logistical support, as well as to monitor changes in the oil fire plumes and the spill. NOAA's field units coordinate

U.S. interagency activities relating to the WMO and IOC plans for Gulf activities. NOAA Corps officers provide support and their duties include serving as liaison to the Royal Saudi Air Force, the United Nations peace-keeping forces, and United States military, as well as serving as scientific/technical advisors to the Kuwait and Saudi Arabian Governments. As members of the nation's seventh uniformed service, NOAA Corps officers have been able to facilitate communication between NOAA's civilian scientists and the military, and coordinate field logistics requirements associated with the international scientific collaboration effort.

The Gulf Program Office has also established an electronic information system to provide news and updates on Gulf activities back to U.S. agencies involved in the crisis. As currently envisioned, NOAA, as the U.S. permanent representative agency to the IOC, will coordinate U.S. oil spill research activities.

SPILL DATA COLLECTION

The collection and dissemination of fire and oil spill data is a another priority. NOAA supported a WMO conference at the National Center for Atmospheric Research (NCAR), in Boulder, Colorado, from July 22-24, to discuss data management issues and to select an archiving system for the storage and retrieval of Gulf environmental information. Data collection centers are expected to be established in the Gulf Region, at WMO headquarters in Geneva, and here in Washington, D.C. Experts

present at the meeting included Germany, the Netherlands (representing UNEP/ROPME), Saudi Arabia (King Fahd University and the Ministry of Defense), and several U.S. agencies and institutions.

NCAR was selected to manage WMO's data management program, and it will be responsible for: 1) immediately inventorying and acquiring all ground-based, aerial, and satellite data related to the fires; 2) transforming such data into a common format; 3) providing an original data archive; 4) providing special archives; 5) distributing copies of the archive to all interested parties at the cost of media and shipping; 6) developing software to assist UNEP/ROPME in establishing a data inventory system in Kuwait; and 7) facilitating the prompt extraction of data of critical importance to human health assessment and development of early warning capabilities.

I would also like to bring your attention to the fact that NOAA's activities with the Gulf countries did not begin with the latest conflict. NOAA began to work with Kuwait, at its request, as early as 1983 on assisting in the effort to contain the environmental damage from an earlier oil spill connected with the Iran-Iraq war. NOAA's HAZMAT unit provided spill movement forecast and transferred trajectory modeling, software and technology to the Kuwait scientists.

Mr. Chairman, this concludes my prepared statement. There are immense challenges ahead for the region. NOAA, as part of an

international effort, can provide critical assistance in the tasks ahead: to assess impacts, protect health and leave the Gulf nations better prepared to cope with the consequences of this unwanted crisis. We are proud of NOAA's contribution to fighting the wars launched on the people of Kuwait and the region, and the planet's atmosphere and hydrosphere. I will be happy to answer any questions you have.

U.S. Department
of Transportation
United States
Coast Guard



Commandant
United States Coast Guard

Washington, D.C. 20593-0001
Staff Symbol
Phone

DEPARTMENT OF TRANSPORTATION

UNITED STATES COAST GUARD

STATEMENTS OF CAPTAIN WILLIAM F. HOLT & CAPTAIN DONALD S. JENSEN

ON COAST GUARD ACTIVITIES IN THE GULF OIL DISCHARGE

BEFORE THE

SUBCOMMITTEES ON OCEANOGRAPHY, GREAT LAKES

AND THE OUTER CONTINENTAL SHELF,

COAST GUARD AND NAVIGATION,

FISHERIES AND WILDLIFE CONSERVATION AND THE ENVIRONMENT,

COMMITTEE ON MERCHANT MARINE AND FISHERIES

HOUSE OF REPRESENTATIVES

OCTOBER 17, 1991

CAPTAIN WILLIAM F. HOLT

U.S. COAST GUARD

Captain Holt is presently serving as the Chief, Marine Environmental Protection Division, Coast Guard Headquarters, Washington, DC, where he is the manager for the Coast Guard's Marine Environmental Protection Program, and one of the primary officers charged with implementing the Oil Pollution Act of 1990. He has had a variety of operational and staff assignments in his 22-year career. After graduation from the Coast Guard Academy in 1968, he served on board the High Endurance Cutters Casco and Owasco, the Buoy Tender Mariposa, and commanded the Cutter Cape Fairweather. Following his service at sea, Captain Holt was assigned to the Environmental Coordination Branch at Coast Guard Headquarters followed by assignments as the alternate Captain of the Port in Sault Ste. Marie, Michigan, Chief of the Environmental Protection Division for the Third District in New York, and Supervisory Inspector for the Coast Guard's Marine Inspection Office in New York City. His most recent assignment was as Commanding Officer of the Marine Safety Office in Huntington, West Virginia.

Captain Holt was awarded a Master of Science Degree in Natural Resource from the University of Michigan in 1975. His military decorations include 2 Coast Guard Commendation Medals and the Coast Guard Achievement Medal.

He is married to the former Valerie Zucker of Arlington, Mass and they have 4 children.

CAPTAIN DONALD S. JENSEN

U.S. COAST GUARD

Captain Jensen is the Commanding Officer, National Strike Force Coordination Center (NSFCC), Elizabeth City, NC. He reported to this assignment in July 1991. His previous assignment was Chief, Applied Science Division and Acting Chief, Applied Engineering Division, U.S. Coast Guard Research and Development Center, Groton, CT.

Captain Jensen graduated from the U.S. Coast Guard Academy in 1965 and holds postgraduate level degrees in Naval Architecture/Marine Engineering and Mechanical Engineering from the University of Michigan.

During his 26 years of Coast Guard service, Captain Jensen has gained broad experience. Assignments in the Marine Safety program include tours at Marine Safety Office Providence, Marine Inspection Office Baltimore, the Atlantic Strike Team and the Marine Safety Staff of the Commander, Fifth Coast Guard District. Following the EXXON VALDEZ incident, he organized the public affairs and protocol functions for the Federal On-Scene Coordinator. Immediately following the Gulf oil discharge, he was selected to serve as Chief of the U.S. Interagency Assessment Team dispatched to advise the Government of Saudi Arabia.

Captain Jensen has had two assignments in the Coast Guard's Research and Development program and was active in the development of an interagency oil spill research program mandated by OPA 90. His Coast Guard sea duty includes engineering tours aboard an icebreaker, and ocean station vessel and a high endurance cutter.

In his present assignment, he is responsible for administering the three Coast Guard pollution strike teams and providing team standardization for response, equipment, maintenance and training. The NSFCC will provide response training to government and industry personnel nationwide to enhance their readiness to respond to pollution incidents. It is also home for the Public Information Assist Team. Other initiatives at the NSFCC include the development and maintenance of a comprehensive computer data base of national and international spill removal resources, personnel and equipment. Additionally, a logistics network will be established to ensure the rapid transport of equipment to the site of a major spill.

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD
STATEMENT OF
CAPTAIN WILLIAM F. HOLT
ON THE COAST GUARD'S ACTIVITIES
IN THE GULF OIL DISCHARGE
BEFORE THE
COMMITTEE ON MERCHANT MARINE AND FISHERIES
SUBCOMMITTEES ON OCEANOGRAPHY,
COAST GUARD AND NAVIGATION,
AND FISHERIES AND WILDLIFE
OCTOBER 17, 1991

GOOD MORNING CHAIRMEN. I AM CAPTAIN WILLIAM HOLT, CHIEF OF THE MARINE ENVIRONMENTAL PROTECTION DIVISION AT COAST GUARD HEADQUARTERS. IT IS MY PLEASURE TO APPEAR BEFORE YOU TODAY TO DISCUSS THE UNITED STATES COAST GUARD'S INVOLVEMENT IN RESPONSE TO A TRULY CATASTROPHIC OIL DISCHARGE IN THE GULF. I AM SURE THAT YOU ARE AWARE OF THE ROLE THE U.S. COAST GUARD HAS PLAYED IN OIL DISCHARGE RESPONSE WITHIN OUR COUNTRY, BUT THE COAST GUARD HAS ALSO BEEN AN EXTREMELY ACTIVE PARTICIPANT IN THE INTERNATIONAL COMMUNITY AS WELL. IT IS THROUGH THE COAST GUARD'S COMMITMENT TO MARINE ENVIRONMENTAL PROTECTION THAT WE HAVE ACHIEVED A LEADERSHIP ROLE IN THE WORLD COMMUNITY, AND HAVE BECOME A FOCAL POINT FOR TECHNICAL EXPERTISE AND OPERATIONAL ASSISTANCE.

MY PURPOSE TODAY IS TO BRIEFLY OUTLINE HOW THE COAST GUARD WAS BROUGHT ONTO THE INTERNATIONAL SCENE FOR THIS PARTICULAR OIL DISCHARGE RESPONSE EFFORT, AND TO EXPLAIN SOME OF THE ACTIONS TAKEN BY THE COAST GUARD IN THE UNITED STATES AND ABROAD TO SUPPORT THE POLLUTION RESPONSE MISSION IN THE GULF REGION.

DURING THE MONTH OF JANUARY 1991, IRAQI FORCES WERE OCCUPYING KUWAIT AFTER INVADING THAT COUNTRY ON AUGUST 2, 1990. THOSE IRAQI FORCES BEGAN DISCHARGING OIL FROM FIXED FACILITIES AND VESSELS IN AN ATTEMPT TO DISRUPT ANY POTENTIAL AMPHIBIOUS LANDING OF COALITION FORCES. BETWEEN JANUARY 19, AND JANUARY 30, 1991 THE FOLLOWING EVENTS OCCURRED:

- CRUDE OIL CARGOES OF SEVERAL OIL TANKERS ANCHORED OFF MINA AL AHMADI, KUWAIT, WERE PUMPED INTO THE GULF
- CRUDE OIL WAS PUMPED THROUGH THE SINGLE-POINT MOORING AT THE SEA ISLAND TERMINAL AT MINA AL AHMADI, KUWAIT
- CRUDE OIL WAS DISCHARGED FROM A TANKER NEAR THE MINA AL BAKR TERMINAL IN IRAQ
- CRUDE OIL WAS DISCHARGED FROM THE MINA AL BAKR TERMINAL IN IRAQ
- THE REFINERY AT MINA ABD ALLAH, KUWAIT, WAS SABOTAGED RESULTING IN THE DISCHARGE OF REFINED OIL PRODUCTS
- CRUDE OIL CARGOES WERE PUMPED FROM THE ANCHORED TANKERS NORTHEAST OF BUBIYAN ISLAND, KUWAIT, INTO THE GULF

EARLY ESTIMATES OF THE AMOUNT OF OIL THAT ACTUALLY ENTERED THE GULF RANGED FROM 130 TO 460 MILLION GALLONS. WE WILL NEVER BE

ABLE TO VERIFY HOW MUCH OIL WAS DISCHARGED, SO ANY FIGURE MUST BE AN ESTIMATE; HOWEVER, TO PLACE THE MAGNITUDE OF THIS DISCHARGE IN PROPER PERSPECTIVE, CONSIDER THAT THE EXXON VALDEZ DISCHARGE IN PRINCE WILLIAM SOUND, ALASKA WAS APPROXIMATELY 11 MILLION GALLONS. AVERAGING THE RANGE OF ESTIMATES, THIS DISCHARGE INTO THE GULF WAS ABOUT 30 TIMES THAT OF THE EXXON VALDEZ.

THE UNITED STATES INTERAGENCY ASSESSMENT TEAM (USIAT) WAS THE FIRST TEAM OF EXPERTS FROM ANY COUNTRY SENT TO THE GULF REGION FOR OIL DISCHARGE RESPONSE. ON JANUARY 24, 1991 THE SAUDI ARABIAN GOVERNMENT FORMALLY REQUESTED TECHNICAL ASSISTANCE FROM THE UNITED STATES THROUGH THE U.S. AMBASSADOR TO SAUDI ARABIA. THE RATIONALE FOR THEIR REQUEST WAS THAT THE UNITED STATES HAD VITAL EXPERIENCE AND EXPERTISE IN HANDLING MASSIVE OIL DISCHARGES, AS EVIDENCED BY THE EXXON VALDEZ INCIDENT. ADDITIONALLY, THE REQUEST WAS A NATURAL RESULT OF THE RECENTLY-CONCLUDED INTERNATIONAL CONVENTION ON OIL POLLUTION PREPAREDNESS RESPONSE AND COOPERATION OF 1990, TO WHICH I WILL REFER LATER.

THE DEPARTMENT OF STATE REFERRED THE SAUDI ARABIAN REQUEST TO THE NATIONAL RESPONSE TEAM (NRT) WHICH CONSISTS OF 15 FEDERAL AGENCIES THAT HAVE JOINED TO COORDINATE POLLUTION RESPONSE EFFORTS TO MINIMIZE DAMAGES TO NATURAL RESOURCES. AS SUCH, THE NRT HAS THE RESPONSIBILITY FOR DEVELOPING AND IMPLEMENTING THE U.S. NATIONAL OIL AND HAZARDOUS SUBSTANCE CONTINGENCY PLAN, AND WAS THE LOGICAL GROUP TO DEVELOP A TEAM THAT COULD RESPOND TO SAUDI ARABIA'S REQUEST. AS YOU ARE AWARE, THE COAST GUARD IS

CHARGED WITH OIL DISCHARGE RESPONSE IN THE MARINE ENVIRONMENT IN THE UNITED STATES. THEREFORE, THE PRESIDENT APPOINTED THE COAST GUARD AS LEAD AGENCY FOR THE FEDERAL GOVERNMENT ON ISSUES RELATED TO THIS OIL DISCHARGE.

IN ADDITION TO COAST GUARD PERSONNEL, THE UNITED STATES INTERAGENCY ASSESSMENT TEAM INITIALLY CONSISTED OF REPRESENTATIVES FROM THE ENVIRONMENTAL PROTECTION AGENCY, THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND THE U.S. ARMY CORPS OF ENGINEERS. THESE AGENCIES QUICKLY PROVIDED REPRESENTATIVES FOR POLLUTION RESPONSE IN THE WAR ZONE. ADDITIONAL AGENCIES JOINED THE USIAT ON SUBSEQUENT DEPLOYMENTS, INCLUDING THE DEPARTMENT OF ENERGY, THE DEPARTMENT OF INTERIOR, A NONGOVERNMENTAL RESPONSE EXPERT AND AN ADDITIONAL COAST GUARD REPRESENTATIVE FOR THE LOWER GULF STATES. EACH OF THESE AGENCIES IS REPRESENTED ON THE NATIONAL RESPONSE TEAM. THEY AND THE OTHER NRT AGENCIES PROVIDED CONTINUOUS SUPPORT AND COORDINATION TO THE USIAT REPRESENTATIVES WHO WERE DEPLOYED IN THE GULF.

EFFORTS HERE AT HOME WERE EXEMPLIFIED BY NOAA'S ESTABLISHMENT OF A SPECIAL DISCHARGE ASSESSMENT CENTER AT COAST GUARD HEADQUARTERS. THE EXPERIENCED NOAA TEAM WHICH STAFFED THE CENTER WORKED CLOSELY WITH THE SAUDI GOVERNMENT AND REPRESENTATIVES FROM KING FAHD UNIVERSITY TO DEVELOP AND EMPLOY AN OIL DISCHARGE TRACKING SYSTEM AND MODELING TOOL THAT WORKED EXTREMELY WELL FOR THE GULF. THIS ENABLED THE USIAT TO RECOMMEND PRIORITY CLEANUP SITES AS A MEANS OF MAXIMIZING THE EMPLOYMENT OF SCARCE RESPONSE RESOURCES.

ONE SIGNIFICANT FACTOR THAT ENTERED INTO THE POLLUTION RESPONSE EQUATION WAS THE FACT THAT THERE WAS AN ONGOING WAR, AND THAT MISSILE ATTACKS, ABANDONED MUNITIONS, AND HARBOR MINES WERE ALWAYS PRESENT IN THE AREAS AFFECTED BY THE OIL DISCHARGE. THE CONSTANT THREAT OF ATTACK HAMPERED ALL TRADITIONAL CLEANUP METHODS. IN MANY CASES, IT WAS SIMPLY TOO DANGEROUS FOR RESPONSE PERSONNEL TO AGGRESSIVELY CONTAIN AND REMOVE THE OIL AS THEY NORMALLY WOULD IN A PEACETIME SITUATION. DESPITE THE THREAT OF SCUD MISSILE ATTACKS AND SURFACE WARFARE ACTION THE MEMBERS OF THE UNITED STATES INTERAGENCY ASSESSMENT TEAM WENT INTO HARMS WAY AND PERFORMED IN A SUPERLATIVE FASHION.

MANY OF THE INITIAL OFFERS OF ASSISTANCE WERE INFORMALLY DIRECTED TO THE U.S. COAST GUARD. AS THE MAGNITUDE OF THE DISCHARGE BECAME KNOWN INTERNATIONALLY, MORE COUNTRIES OFFERED ASSISTANCE AND EVENTUALLY THE INTERNATIONAL MARITIME ORGANIZATION (IMO) FORMALLY ASSUMED THE ROLE INITIALLY PERFORMED BY THE COAST GUARD. THE IMO IS A UNITED NATIONS ORGANIZATION THAT ADDRESSES INTERNATIONAL ISSUES REGARDING THE PROTECTION OF LIFE, PROPERTY, AND THE MARINE ENVIRONMENT. IN NOVEMBER 1990, IMO MEMBER STATES NEGOTIATED THE INTERNATIONAL CONVENTION ON OIL POLLUTION PREPAREDNESS RESPONSE AND COOPERATION (OPRC). AS YOU MAY KNOW, THE OPRC WAS A UNITED STATES INITIATIVE, AND IT WAS THE U.S. COAST GUARD THAT WAS INSTRUMENTAL IN GUIDING THIS CONVENTION THROUGH INTERNATIONAL NEGOTIATIONS.

THE GULF OIL DISCHARGE WAS THE FIRST OPPORTUNITY FOR THE OPRC TO BE PLACED INTO EFFECT. AS PROVIDED FOR IN THE CONVENTION, THE IMO ASSUMED LEADERSHIP FOR COORDINATING ALL FOREIGN OFFERS OF ASSISTANCE. THE IMO WAS VERY QUICK TO ESTABLISH A CLEARING HOUSE FOR THIS PURPOSE IN LONDON, STAFFED ACCORDING TO THE CONVENTION. SINCE MANY OF THE INITIAL EFFORTS TOOK PLACE AT COAST GUARD HEADQUARTERS, IN WASHINGTON, D.C., THE U.S. COAST GUARD REPRESENTATIVE ASSIGNED TO THE IMO BECAME THE MAINSTAY FOR THE COORDINATION ACTIVITIES IN LONDON.

RAPID DEPLOYMENT OF THE USIAT INTO THE GULF REGION RESULTED IN THE UNITED STATES TAKING THE LEADERSHIP ROLE UNTIL PROPERLY RELIEVED BY AN IMO REPRESENTATIVE. ONCE THE IMO REPRESENTATIVE ARRIVED, THE USIAT TEAM BECAME KNOWN AS THE INTERNATIONAL INTERAGENCY ASSESSMENT TEAM. THE U.S. COAST GUARD REMAINED IN CHARGE OF THE AMERICAN CONTINGENT. THE CONVENTION STRUCTURE WORKED EXTREMELY WELL, AND THE IMO FULFILLED THEIR RESPONSIBILITIES IN AN ADMIRABLE FASHION. THE EFFORTS OF THE IMO SERVED AS A BASIS FOR OTHER UNITED NATIONS ORGANIZATIONS TO PARTICIPATE IN THE GULF CRISIS. THE UNITED NATIONS ENVIRONMENTAL PROGRAM FOLLOWED THE LEAD OF THE IMO IN ESTABLISHING A RESPONSE ORGANIZATION TASKED WITH ADDRESSING THE BROADER ENVIRONMENTAL ISSUES AND IMPACTS ASSOCIATED WITH THE OIL DISCHARGE AND OIL-WELL FIRES.

THE COAST GUARD PROVIDED HARDWARE AS WELL AS TECHNICAL EXPERTISE TO THE GULF AREA. IT WAS EVIDENT FROM THE ONSET THAT DETAILED

MAPPING OF THE DISCHARGE AND AFFECTED AREAS WITHIN THE GULF WAS NECESSARY IN ORDER TO MOUNT AN EFFECTIVE RESPONSE EFFORT. OVERFLIGHTS AND SATELLITE IMAGERY WERE NOT ABLE TO PROVIDE THE NEEDED COVERAGE FOR SUCH A MASSIVE DISCHARGE. ON FEBRUARY 6, 1991, THE SAUDI ARABIAN GOVERNMENT REQUESTED THAT THE COAST GUARD PROVIDE ITS HU-25 FALCON JET AIRCRAFT WITH SPECIAL OIL SURVEILLANCE EQUIPMENT CALLED "AIREYE." "AIREYE" IS AN AERIAL SURVEILLANCE INFORMATION GATHERING AND RECORDING SYSTEM INSTALLED IN CERTAIN COAST GUARD AIRCRAFT. IT IS COMPOSED OF SIDE-LOOKING AIRBORNE RADAR (SLAR), INFRARED, AND ULTRAVIOLET SCANNERS. SLAR PROVIDES A FILM IMAGE OF THE OIL ON THE SURFACE OF THE WATER AND A RECORD OF THE LOCATION OF THE OIL, AS WELL AS ITS CHARACTERISTICS. TWO AIREYE-EQUIPPED AIRCRAFT WERE DEPLOYED TO THE GULF REGION, ALONG WITH AN AVIATION DETACHMENT TO OPERATE AND MAINTAIN THE AIRCRAFT AND EQUIPMENT.

-

ONCE THE EXTENT OF THE DISCHARGE WAS KNOWN, AND AREAS OF MAJOR IMPACT WERE IDENTIFIED, THE TASK OF ESTABLISHING PRIORITIES FOR CLEANUP BECAME APPARENT. OF MOST CONCERN WERE THE DESALINIZATION PLANTS WHICH PROVIDED THE DRINKING WATER FOR SAUDI ARABIA AND OTHER GULF STATES, AS WELL AS FOR COALITION FORCES. THE PLANTS WERE GIVEN TOP PRIORITY FOR PROTECTIVE BOOMING STRATEGIES AND OIL-REMOVAL OPERATIONS. THE PRIMARY FACILITY TO PROTECT IN SAUDI ARABIA WAS THE DESALINIZATION PLANT IN JUBAYL, THE SOURCE OF 200 MILLION GALLONS OF WATER EACH DAY, INCLUDING 80-PERCENT OF THE WATER FOR THE SAUDI CAPITAL OF RIYADH.

PRIVATE CORPORATIONS PROVIDED THE BULK OF EQUIPMENT FOR PROTECTION OF THESE FACILITIES WHILE THE USIAT PROVIDED THE LEADERSHIP AND TECHNICAL EXPERTISE NEEDED TO MOUNT AN AGGRESSIVE RESPONSE STRATEGY. THE USIAT CONTINGENT WAS EVENTUALLY RELIEVED BY IMO PERSONNEL, WITH THE LAST USIAT REPRESENTATIVES DEPARTING THE REGION ON JULY 31, 1991. HOWEVER, THE IMO HAS REMAINED ACTIVE SINCE JULY. BEYOND THEIR ROLE ESTABLISHED IN THE CONVENTION, IMO HAS BEEN MANAGING A SPECIAL INTERNATIONAL TRUST FUND THAT WAS ESTABLISHED ON MARCH 15, 1991 TO SUPPORT CLEANUP EFFORTS AND TO MITIGATE ADVERSE ENVIRONMENTAL IMPACTS. WITH THIS MONEY (CURRENTLY ABOUT \$6 MILLION), IMO HAS FACILITATED THE RAPID DEPLOYMENT OF OIL-CLEANUP EQUIPMENT AND CONTINUES TO CARRY OUT REMOVAL PROJECTS IN ENVIRONMENTALLY-SENSITIVE AREAS.

ALL REMOVAL AND RESEARCH PROJECTS ARE BEING COORDINATED THROUGH THE LEADERSHIP OF THE METEOROLOGICAL AND ENVIRONMENTAL PROTECTION ADMINISTRATION (MEPA), KING FAHD UNIVERSITY, AND IMO HEADQUARTERS IN LONDON. A CURRENT PROJECT IS UNDERWAY TO TEST AND EVALUATE VARIOUS SHORELINE CLEANUP TECHNIQUES FOR SAND AND ROCK BEACHES AS WELL AS INTERTIDAL AND SUBTIDAL AREAS. THE PURPOSE OF THE STUDY IS TO DETERMINE WHICH CLEANUP METHODS ARE THE MOST EFFECTIVE AND ENVIRONMENTALLY-SOUND.

IMO IS ALSO PROVIDING OIL POLLUTION RESPONSE EQUIPMENT TO KUWAIT. THIS EQUIPMENT HAS BEEN USED TO REPLACE EQUIPMENT THAT WAS DAMAGED OR DESTROYED DURING THE HOSTILITIES. MOST OF THIS EQUIPMENT HAS BEEN DONATED TO THE SPECIAL FUND BY VARIOUS COUNTRIES FROM AROUND THE WORLD.

RECENTLY, THE COAST GUARD'S REPRESENTATIVE TO IMO INDICATED THAT THERE IS NO FURTHER DISCHARGE OF OIL, AND THAT ALL FREE-FLOATING OIL HAS BEEN REMOVED FROM THE WATER. THE ONLY OIL-SKIMMING OPERATIONS THAT ARE OCCURRING AT THIS TIME ARE IN SUPPORT OF SHORELINE CLEANUP TESTING AND EVALUATION PROJECTS SPONSORED BY THE IMO.

AT THIS TIME I WOULD LIKE TO INTRODUCE CAPTAIN DONALD JENSEN. CAPTAIN JENSEN WAS THE FIRST SPOKESPERSON FOR THE USIAT, AND HE WILL BE ABLE TO PROVIDE ADDITIONAL DETAILS ON THE ACTIVITIES THAT OCCURRED IN THE GULF THEATER.

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD
STATEMENT OF
CAPTAIN DONALD S. JENSEN
ON THE COAST GUARD'S ACTIVITIES
IN THE GULF OIL DISCHARGE
BEFORE THE
COMMITTEE ON MERCHANT MARINE AND FISHERIES
SUBCOMMITTEES ON OCEANOGRAPHY,
COAST GUARD AND NAVIGATION,
AND FISHERIES AND WILDLIFE
OCTOBER 17, 1991

GOOD MORNING CHAIRMEN AND DISTINGUISHED MEMBERS OF THE SUBCOMMITTEES. I AM CAPTAIN DONALD S. JENSEN, COMMANDING OFFICER OF THE NATIONAL STRIKE FORCE COORDINATION CENTER, ELIZABETH CITY, NORTH CAROLINA. CAPTAIN HOLT HAS ALREADY OUTLINED THE OVERALL ASSISTANCE PROVIDED TO THE GOVERNMENT OF SAUDI ARABIA BY THE UNITED STATES COAST GUARD IN RESPONSE TO THE GULF OIL DISCHARGE. I WILL BRIEFLY REVIEW MY ROLE AND OBSERVATIONS AS CHIEF OF THE UNITED STATES INTERAGENCY ASSESSMENT TEAM (USIAT) DISPATCHED BY PRESIDENT BUSH ON JANUARY 27, 1991.

THE INITIAL TEAM CONSISTED OF REPRESENTATIVES FROM THE U. S. COAST GUARD, THE ENVIRONMENTAL PROTECTION AGENCY, THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, THE U. S. ARMY CORPS OF ENGINEERS, AND A NONGOVERNMENTAL RESPONSE EXPERT. THE TEAM'S MISSION WAS TO ASSESS THE MAGNITUDE AND IMPACT OF THE DISCHARGE ON SAUDI ARABIA AND TO ADVISE, RECOMMEND, AND TRAIN SAUDI GOVERNMENT REPRESENTATIVES IN APPROPRIATE RESPONSE STRATEGIES AND TECHNIQUES.

THE SAUDIS HAD DEVELOPED A NATIONAL OIL DISCHARGE CONTINGENCY PLAN SEVERAL YEARS BEFORE, IN THE AFTERMATH OF A MAJOR DISCHARGE IN 1983-84. THE PLAN WAS NOT SIGNED BY KING FAHD UNTIL THREE DAYS AFTER THIS DISCHARGE OCCURRED. THE PLAN DESIGNATED THE METEOROLOGICAL AND ENVIRONMENTAL PROTECTION ADMINISTRATION (MEPA) AS THE LEAD SAUDI AGENCY, AND PREDESIGNATED MEPA'S VICE PRESIDENT, DR. NIZAR TAWFIQ, AS ON-SCENE COORDINATOR. THE USIAT ARRIVED IN DHAHRAN, SAUDI ARABIA JUST PRIOR TO DR. TAWFIQ AND HIS STAFF, AND FOUND THAT A FORMAL, NATIONAL RESPONSE ORGANIZATION WAS NOT YET IN PLACE.

THE FIRST CONCERN RAISED BY THE USIAT WAS THE NEED FOR ACCURATE DAILY OVERFLIGHT DATA AND A CORRECT POSITION OF THE DISCHARGE. USING UNITED STATES NAVY AIRCRAFT, U. S. AND SAUDI OBSERVERS STARTED A DAILY OVERFLIGHT ROUTINE. THE SAUDI OBSERVERS WERE QUICKLY TRAINED AND SAUDI AIRCRAFT EVENTUALLY TOOK OVER THE SURVEILLANCE MISSION. VISUAL OVERFLIGHT AND SATELLITE DATA WERE UNABLE TO PROVIDE OIL SLICK MAPPING OF THE ENTIRE GULF, SO THE SAUDI GOVERNMENT REQUESTED THAT THE U. S. COAST GUARD PROVIDE ITS HU-25 FALCON JET AIRCRAFT WITH SPECIAL "AIREYE" OIL SURVEILLANCE CAPABILITY. ONCE THE AIRCRAFT WERE ON-SCENE, EXCELLENT SIDE-LOOKING AIRBORNE RADAR SURVEILLANCE IMAGERY OF THE OIL DISCHARGE WAS PROVIDED ON A DAILY BASIS.

A SECOND MAJOR CONCERN OF THE USIAT WAS DEVELOPMENT AND IMPLEMENTATION OF AN ORGANIZATIONAL STRUCTURE CAPABLE OF DEALING WITH A DISCHARGE OF THESE PROPORTIONS. USING A STRUCTURE

DEVELOPED FOLLOWING THE EXXON VALDEZ DISCHARGE, THE USIAT PROPOSED A STRUCTURE THAT FORMED THE BASIS FOR THE RESPONSE ORGANIZATION THAT ULTIMATELY EVOLVED.

THE LACK OF ADEQUATE FUNDING WAS AN ISSUE FROM THE OUTSET. ON JANUARY 31, 1991, DR. TAWFIQ, AT MY RECOMMENDATION, REQUESTED \$1 BILLION TO INITIATE AN AGGRESSIVE RESPONSE EFFORT. EXCEPT FOR APPROXIMATELY \$2 MILLION THAT WAS MADE AVAILABLE SHORTLY AFTER THE INITIAL FUNDING REQUEST, NO OTHER FUNDING WAS PROVIDED DURING THE FIRST 30 DAYS. THIS CONFOUNDED EFFORTS TO MOUNT AN EFFECTIVE RESPONSE.

OTHER COUNTRIES ALSO STARTED SENDING EXPERTS TO HELP THE SAUDIS COPE WITH THE DISCHARGE. AS THE EXPERTS ARRIVED, THEY WERE INTEGRATED INTO THE USIAT ORGANIZATION AS ADVISORS. CONSEQUENTLY, THE USIAT TOOK ON AN INTERNATIONAL FLAVOR AND BECAME KNOWN AS THE INTERNATIONAL INTERAGENCY ASSESSMENT TEAM.

ANOTHER IMPORTANT ISSUE WAS THE DEVELOPMENT OF AN OVERALL NATIONAL RESPONSE STRATEGY. THE USIAT RECOMMENDED, AND THE SAUDI GOVERNMENT ADOPTED, THE GENERAL RESPONSE PHILOSOPHY OF: PROTECTING HIGH PRIORITY FACILITIES AND ENVIRONMENTALLY-SENSITIVE AREAS; RECOVERING OIL OFFSHORE IN THOSE STRATEGIC LOCATIONS THAT WOULD MINIMIZE SHORELINE IMPACT; AND REMOVING OIL IN SHORELINE AREAS TO PREVENT IT FROM CONTINUING ITS MOVEMENT DOWN THE COAST. A NATIONAL PRIORITY LIST OF FACILITIES AND ENVIRONMENTALLY-SENSITIVE AREAS WAS ESTABLISHED AND THE LIMITED EQUIPMENT IN-COUNTRY WAS MOVED TO THE HIGHEST PRIORITY SITES.

AS MENTIONED BY CAPT HOLT, THE USIAT COORDINATED WITH THE INTERNATIONAL MARITIME ORGANIZATION (IMO) IN ESTABLISHING A CLEARING HOUSE IN LONDON TO SCREEN AND CATEGORIZE OFFERS OF ASSISTANCE THAT POURED IN FROM GOVERNMENTS FROM AROUND THE WORLD. AS MEPA BEGAN TO INITIATE THEIR RESPONSE ACTION, A PATCHWORK QUILT OF RESOURCES WAS PIECED TOGETHER FROM THE LIMITED IN-COUNTRY SOURCES, FOREIGN GOVERNMENTS, AND UNITED STATES COMPANIES IN SAUDI ARABIA.

AS THE SLICK MOVED SOUTHWARD, THE LOWER GULF STATES BECAME INCREASINGLY CONCERNED ABOUT THE POTENTIAL IMPACT ON THEM. BASED ON THIS CONCERN, USIAT MEMBERS VISITED BAHRAIN, QATAR AND THE UNITED ARAB EMIRATES, AND ASSISTED THEM IN THEIR PREPARATIONS.

THE INITIAL USIAT MEMBERS WERE RELIEVED BY A SECOND TEAM ON FEBRUARY 26, 1991. THE FIRST TEAM MEMBERS LEFT SAUDI ARABIA WITH A FEELING OF FRUSTRATION THAT ALL RECOMMENDATIONS HAD NOT BEEN IMPLEMENTED. HOWEVER, WE WERE SATISFIED THAT WE HAD MADE A POSITIVE CONTRIBUTION IN HELPING THE SAUDIS MAKE EFFECTIVE USE OF THEIR LIMITED MONETARY, PERSONNEL, AND EQUIPMENT RESOURCES TO MOUNT A RESPONSE EFFORT CONSISTENT WITH THEIR NATIONAL PRIORITIES.

THANK YOU FOR THIS OPPORTUNITY TO SPEAK BEFORE THE SUBCOMMITTEES. CAPT HOLT AND I WILL BE HAPPY TO RESPOND TO ANY QUESTIONS THAT YOU MAY HAVE.

DAVID A. COLSON
DEPUTY ASSISTANT SECRETARY OF STATE
FOR OCEANS AND FISHERIES AFFAIRS
BEFORE
THE SUBCOMMITTEE ON OCEANOGRAPHY, GREAT LAKES
AND CONTINENTAL SHELF
THE SUBCOMMITTEE ON COAST GUARD AND NAVIGATION
THE SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION
AND THE ENVIRONMENT
OF THE
HOUSE MERCHANT MARINE AND FISHERIES COMMITTEE
OCTOBER 17, 1991

GOOD MORNING MR. CHAIRMAN:

IT IS A PLEASURE FOR ME TO BE HERE TODAY TO TESTIFY ALONG WITH CAPTAIN BIFF HOLT AND DR. EARLE ON THE ENVIRONMENTAL DAMAGE IN THE PERSIAN GULF AREA, THE RESPONSE OF THE UNITED STATES AND THE INTERNATIONAL COMMUNITY, AND THE FUTURE CHALLENGES LEFT IN THE WAKE OF THE GULF WAR.

I PLAN TO APPROACH THIS TASK IN THE FOLLOWING WAY:

FIRST, I WILL OUTLINE THE TASK UNDERTAKEN BY THE DEPARTMENT OF STATE IN THE AFTERMATH OF THE GULF WAR;

-2-

SECOND, I WILL EXAMINE THE ROLE PLAYED BY
INTERNATIONAL ORGANIZATIONS;

THIRD, I WILL ADDRESS YOUR SPECIFIC QUESTION OF UNITED
NATIONS' PROGRESS IN OBTAINING REPARATIONS FROM IRAQ
FOR ENVIRONMENTAL DAMAGE; AND

FINALLY, I WANT TO EMPHASIZE THE IMPORTANCE OF THE
INTERNATIONAL CONVENTION ON OIL POLLUTION
PREPAREDNESS, RESPONSE AND COOPERATION (OPRC), WHICH
WAS ADOPTED IN NOVEMBER 1990 AND WHICH WAS REPORTED
FAVORABLY TO THE SENATE FOR ITS ADVICE AND CONSENT TO
RATIFICATION LAST WEEK.

THE ROLE OF THE DEPARTMENT OF STATE

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE, I CANNOT CONVEY
TO YOU ADEQUATELY THE SENSE OF OUTRAGE THAT ACCOMPANIED THE
NEWS THAT SADDAM HUSSEIN WAS DELIBERATELY RELEASING OIL INTO
THE PERSIAN GULF. THIS FEELING WAS SHARED BY THE AMERICAN
PEOPLE AS THEY SAW THOSE TELLING PHOTOGRAPHS BROADCAST ON
TELEVISION, FOR ALL TO SEE.

AS SOON AS THE OIL RELEASE TOOK PLACE, PRESIDENT BUSH
DIRECTED THAT AN INTER-AGENCY TEAM OF OIL POLLUTION AND
ENVIRONMENTAL EXPERTS LED BY THE U.S. COAST GUARD, BE

-3-

DISPATCHED TO SAUDI ARABIA TO ASSIST THE SAUDIS IN THEIR EFFORTS TO CONTAIN THE SLICK. THE DEPARTMENT OF STATE, AS A MEMBER OF THE NATIONAL RESPONSE TEAM AND AS CHAIR OF THE KUWAIT TASK FORCE, WAS CALLED INTO IMMEDIATE ACTION IN THOSE FIRST DAYS TO ASSIST IN THE LOGISTICS OF GETTING APPROPRIATE UNITED STATES PERSONNEL TO SAUDI ARABIA. THESE LOGISTICS, DURING THE ENSUING WAR, WERE NOT EASY. BUT WITHIN THE SPACE OF A FEW DAYS, THE UNITED STATES HAD A TEAM ON THE GROUND WITH THE HELP OF OUR EMBASSY IN RIYADH AND OUR CONSULATE GENERAL IN DHAHARAN.

CAPTAIN HOLT AND CAPTAIN JENSEN CAN PROVIDE INFORMATION FOLLOWING THE ARRIVAL OF THE TEAM AND THE DIFFICULTY IN ASSESSING THE EXTENT OF THE OIL SLICK, WHEN IT WAS IMPOSSIBLE TO OVERFLY ACTIVE WAR ZONES. MY ONLY COMMENT HERE IS TO COMMEND THOSE MEMBERS OF THE UNITED STATES TEAM WHO RISKED THEIR LIVES TO PROVIDE TECHNICAL ASSISTANCE IN THIS EMERGENCY.

DURING THIS TIME, ASSISTANT SECRETARY BOHLEN AND CAPTAIN HOLT MADE SPECIAL EFFORTS TO RESPOND TO CONGRESSIONAL INQUIRIES ON THE SLICK AND GAVE EXTENSIVE HOUSE AND SENATE STAFF BRIEFINGS, PROVIDING AS MUCH INFORMATION AS WE WERE ABLE TO GLEAN AS THE HOURS PROGRESSED. WE WERE CAREFUL THROUGHOUT OUR PRESENTATIONS ON THE SUBJECT TO NEVER REFER TO THIS AS AN OIL SPILL, WHICH IMPLIES AN ACCIDENTAL CHARACTER, BUT RATHER TO CALL IT WHAT IT WAS, NAMELY A DELIBERATE ACT.

RESPONSE OF INTERNATIONAL ORGANIZATIONS

ASIDE FROM THE LOGISTICS OF FIELDING THE UNITED STATES TEAM, THE NEXT JOB OF THE DEPARTMENT INVOLVED THE INTERNATIONAL COMMUNITY. THE UNITED STATES HAD ACTED IN RESPONSE TO THE SAUDI GOVERNMENT REQUEST, BUT THE MAGNITUDE OF THE PROBLEM NECESSITATED AN INTERNATIONAL APPROACH.

THE PRINCIPAL INTERNATIONAL ORGANIZATIONS INVOLVED WERE THE INTERNATIONAL MARITIME ORGANIZATION (IMO) AND THE UNITED NATIONS ENVIRONMENT PROGRAM (UNEP). THE IMO SAW ITS ROLE PRIMARILY AS A CENTRAL CLEARINGHOUSE OF INFORMATION ON WHAT EQUIPMENT AND PERSONNEL WERE AVAILABLE ON A WORLDWIDE BASIS, A ROLE CONTEMPLATED BY THE OIL POLLUTION RESPONSE CONVENTION OR THE INTERNATIONAL CONVENTION ON OIL POLLUTION PREPAREDNESS RESPONSE AND COOPERATION OF 1990 (OPRC). UNEP, FOR ITS PART, SAW ITS ROLE AS MORE LONGER TERM, AND HOPED TO MAKE A CONTRIBUTION IN ASSESSING THE EFFECTS OF SUCH A LARGE OIL SLICK AND SET OUT TO FIND WAYS TO COORDINATE SUCH AN ASSESSMENT.

IN LATE JANUARY 1991, AS THE WORLD BECAME AWARE OF MASSIVE RELEASES OF CRUDE OIL INTO THE GULF, A NUMBER OF GOVERNMENTS MADE IT KNOWN TO THE IMO THAT THEY WOULD BE READY TO RENDER ASSISTANCE IN DEALING WITH THE INCIDENT; AND IT BECAME CLEAR THAT THE IMO COULD, IF REQUESTED, COMMENCE CHANNELLING SUCH OFFERS OF GOVERNMENTS OF THE REGION. UPON BEING INFORMED OF

-5-

THIS SITUATION, THE GOVERNMENT OF SAUDI ARABIA INVITED THE IMO TO SCREEN OFFERS OF INTERNATIONAL ASSISTANCE ON ITS BEHALF AND TO ASCERTAIN THE TERMS AND CONDITIONS ATTACHED TO SUCH OFFERS.

THE IMO RESPONDED, ACTING IN ACCORDANCE WITH THE PROVISIONS OF THE OPRC EVEN THOUGH IT WAS NOT YET IN FORCE. IT ESTABLISHED A COORDINATION CENTER WITHIN THE MARINE ENVIRONMENT DIVISION THAT PROVIDED INFORMATION CONCERNING THE AVAILABILITY OF POLLUTION RESPONSE RESOURCES AND COORDINATED GOVERNMENTAL OFFERS OF ASSISTANCE. THIS CENTER PROVIDED INVALUABLE ASSISTANCE TO SAUDI ARABIA AND OTHER STATES IN RESPONDING TO THE IRAQI OIL RELEASE INTO THE GULF. FOR AN INITIAL PERIOD OF SEVERAL WEEKS, THE GOVERNMENTS OF FRANCE, JAPAN, THE UNITED KINGDOM AND THE UNITED STATES MADE PERSONNEL AVAILABLE ON A TEMPORARY BASIS TO STAFF THE CENTER WHICH WAS OPERATING ON A SEVEN DAY A WEEK BASIS.

THE MAIN IMPACT OF THE RELEASE WAS ON SAUDI ARABIA'S MARINE AND COASTAL ENVIRONMENT. NATIONAL RESPONSE EFFORTS WERE COORDINATED THROUGH THE METEOROLOGY AND ENVIRONMENTAL PROTECTION ADMINISTRATION (MEPA) OPERATIONS CENTER IN DHAHRAN. MEPA WAS ASSISTED IN ITS EFFORTS BY AN INTERNATIONAL INTERAGENCY ASSESMENT TEAM (IIAT), INITIALLY LED BY PERSONNEL FROM THE UNITED STATES COAST GUARD WITH STAFF FROM THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY AND THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.

-6-

IN ORDER TO FACILITATE THE FLOW OF INFORMATION BETWEEN THE IMO AND IIAT, AN IMO LIAISON OFFICE WAS ESTABLISHED IN THE OPERATIONS CENTER IN DHAHRAN ON THE BASIS OF STAFF SECONDMENTS BY DENMARK AND THE UNITED STATES.

MANY GOVERNMENTS OFFERED ASSISTANCE THROUGH THE IMO AND A NUMBER OF THESE OFFERS WERE TAKEN UP BY GOVERNMENTS OF THE REGION. IN ADDITION, SEVERAL COUNTRIES HAVE ASSISTED COUNTRIES OF THE REGION WITH THE PROTECTION OF COASTAL INSTALLATIONS AND CLEAN-UP EFFORTS ON A BILATERAL BASIS.

ADDITIONALLY, THE IMO ESTABLISHED A GULF OIL POLLUTION DISASTER FUND TRUST FUND, FOR THE SUPPORT OF EFFORTS TO CLEAN UP THE OIL SPILL AND MITIGATE ITS ENVIRONMENTAL IMPACT. THE PRIMARY PURPOSE OF THE TRUST FUND WAS TO FACILITATE THE RAPID DEPLOYMENT OF EQUIPMENT AND SERVICES AND TO CONTRACT FOR THE PROTECTION AND CLEANUP OF SOME OF THE MORE ENVIRONMENTALLY SENSITIVE AREAS. CONTRIBUTIONS WERE ACCEPTED IN CASH OR IN KIND.

THE GOVERNMENTS OF THE UNITED KINGDOM, JAPAN, CANADA THE NETHERLANDS, SWITZERLAND AND LUXEMBOURG PLUS THE EUROPEAN COMMUNITY HAVE CURENTLY CONTRIBUTED ABOUT \$6 MILLION TO THE IMO TRUST FUND.

-7-

FOR ITS PART, THE UNITED NATIONS ENVIRONMENT PROGRAM ALSO WENT INTO HIGH GEAR. THE IMO HAD ALREADY BEEN WORKING WITH MEMBER STATES RESPONDING TO THE OIL RELEASE; THESE ACTIVITIES WERE INCORPORATED INTO THE FOUNDATION OF THE BROADER ISSUES COVERED BY UNEP. IN EARLY FEBRUARY, 1991, THE FIRST UNITED NATIONS INTERAGENCY CONSULTATION WAS CONVENED IN GENEVA TO PROMOTE COOPERATION AND COORDINATION WITHIN THE UNITED NATIONS SYSTEM. THERE WAS WIDESPREAD SUPPORT FOR USING THE KUWAIT ACTION PLAN, AN ENVIRONMENT PROGRAM ESTABLISHED BY THE GULF STATES IN 1979 AS PART OF THE UNEP REGIONAL SEAS PROGRAM TO PROTECT GULF WATERS AND COASTS FROM POLLUTION. CALLS WERE ALSO MADE FOR THE REVITALIZATION OF THE REGIONAL ORGANIZATION FOR THE PROTECTION OF THE MARINE ENVIRONMENT (ROPME), WHICH IS THE SECRETARIAT FOR THAT REGIONAL SEAS PROGRAM.

IN EARLY FEBRUARY, UNEP DISPATCHED A SENIOR STAFF MEMBER TO BAHRAIN TO HELP IN THE REVITALIZATION OF ROPME AND TO ASSIST ROPME IN COORDINATING THE ACTIVITIES OF UNITED NATIONS AGENCIES, OTHER ORGANIZATIONS AND REPRESENTATIVES OF GOVERNMENTS PROVIDING ASSISTANCE. ADDITIONALLY, UNEP PROVIDED ASSISTANCE IN THE FIELD AND PRESENTED A PLAN OF ACTION TO THE ROPME MEETING, WHICH WAS UNANIMOUSLY ADOPTED. THAT ACTION PLAN CALLED FOR JOINT ACTION TO COMBAT THE OIL SLICK. THE PRINCIPAL COMPONENTS OF THE PLAN INCLUDED SURVEILLANCE, MODELING, IDENTIFICATION OF SENSITIVE AREAS, UPDATING THE INVENTORY OF

-8-

PERSONNEL AND EQUIPMENT AVAILABLE FOR COMBATING, CONTAINMENT AND REMOVAL OF OIL.

A SECOND UNITED NATIONS INTERAGENCY CONSULTATION TOOK PLACE IN MARCH IN GENEVA. AT THAT MEETING, A UN INTERAGENCY PLAN WAS DEVELOPED. THIS PLAN DEALT WITH FOUR SEPARATE BUT INTERLINKED AREAS: THE COASTAL AND MARINE ENVIRONMENT, THE ATMOSPHERE, THE ISLAND TERRESTRIAL AREAS AND HAZARDOUS WASTES. EVERY EFFORT HAS BEEN MADE TO BUILD UPON DATA AND INFORMATION ALREADY GENERATED BY TEAMS OPERATING THE AREA.

OTHER UNITED NATIONS ORGANIZATIONS PLAYED A ROLE IN THE PERSIAN GULF CLEAN UP EFFORTS. THE WORLD CONSERVATION UNION, THE WORLD-WIDE FUND FOR NATURE, AND THE INTERNATIONAL OCEANOGRAPHIC COMMISSION ARE BUT A FEW.

COMPENSATION

MR. CHAIRMAN, I HAVE NOW ARRIVED AT THE THIRD POINT IN MY TESTIMONY. THAT IS THE ISSUE OF COMPENSATION FOR DAMAGE TO THE ENVIRONMENT. AS YOU MAY KNOW, UNITED NATIONS SECURITY COUNCIL RES. 687 REAFFIRMED IRAQ'S LIABILITY UNDER INTERNATIONAL LAW FOR ENVIRONMENTAL DAMAGE AND DEPLETION OF NATURAL RESOURCES AS A RESULT OF IRAQ'S UNLAWFUL INVASION AND OCCUPATION OF KUWAIT. RESOLUTION 687 ALSO ESTABLISHED A COMPENSATION FUND FOR THE

-9-

PURPOSE OF MEETING CLAIMS FOR LOSS AND DAMAGE RESULTING FROM THE INVASION AND OCCUPATION OF KUWAIT.

THIS COMPENSATION FUND IS TO BE FUNDED BY IRAQI OIL EXPORT EARNINGS. A SHARE OF THOSE EARNINGS, WHICH CAN BE NO MORE THAN 30%, WILL BE PLACED INTO THE FUND. RECENT SECURITY COUNCIL RESOLUTIONS (UNSCR 706 AND 712) ALLOW IRAQ TO EXPORT \$ 1.6 BILLION WORTH OF OIL IN THE NEXT SIX MONTHS UNDER THE CONTROL OF THE UN SANCTIONS COMMITTEE. THE PROCEEDS OF EACH SALE ARE TO BE DEPOSITED IN AN ESCROW ACCOUNT, 30% OF WHICH WILL BE PAID INTO THE COMPENSATION FUND. IRAQ HAS NOT AS YET INDICATED ITS INTENTION TO COMPLY WITH RESOLUTION 706 AND NO OIL EXPORTS HAVE SO FAR TAKEN PLACE.

OIL SPILL RESPONSE AND PREPAREDNESS CONVENTION

IN CONCLUSION, MR. CHAIRMAN, WE ARE PLEASED THAT THE SENATE FOREIGN RELATIONS COMMITTEE RECENTLY HELD A HEARING ON THE OPRC AND REPORTED IT FAVORABLY TO THE FULL SENATE FOR ADVICE AND CONSENT. THE CONVENTION, WHICH WAS NEGOTIATED LAST YEAR UNDER THE AUSPICES OF THE IMO, WAS DEVELOPED IN RESPONSE TO PRESIDENT BUSH'S ENVIRONMENTAL INITIATIVE AT THE PARIS ECONOMIC SUMMIT IN JULY OF 1989. IT GREW OUT OF A RECOGNITION, FOLLOWING THE EXXON VALDEZ DISASTER, THAT TRULY CATASTROPHIC OIL SPILLS HAVE THE POTENTIAL TO OVERWHELM THE RESPONSE CAPABILITIES AND RESOURCES OF EVEN LEADING INDUSTRIALIZED

-10-

NATIONS. IT WAS ALSO RECOGNIZED THAT MUCH OF TODAY'S MARINE TRANSPORT OCCURS IN AND NEAR THE WATERS OF DEVELOPING COUNTRIES, WHICH MAY BE LESS PREPARED TO RESPOND TO SUCH MAJOR SPILLS. THERE HAD BEEN NO EXISTING GLOBAL INTERNATIONAL CONVENTION THAT ADDRESSED MARINE OIL POLLUTION PREPAREDNESS AND RESPONSE.

MR. CHAIRMAN, THE OPRC CONVENTION WILL INCREASE THE PROTECTION OF THE MARINE ENVIRONMENT IN FOUR PRINCIPAL CATEGORIES — PLANNING, REPORTING, TECHNOLOGY SHARING AND COOPERATION. IT REQUIRES PARTIES TO ESTABLISH A NATIONAL SYSTEM FOR PREPAREDNESS AND RESPONSE. UNDER THIS SYSTEM, PARTIES MUST ENSURE THAT VESSELS FLYING ITS FLAG HAVE OIL POLLUTION EMERGENCY PLANS ON BOARD. SEA PORTS, OIL HANDLING FACILITIES AND OFFSHORE PLATFORMS MUST ALSO HAVE EMERGENCY RESPONSE PLANS THAT ARE COORDINATED WITH THE APPLICABLE NATIONAL SYSTEM FOR PREPAREDNESS AND RESPONSE. PARTIES MUST ESTABLISH NATIONAL RESPONSE PLANS WHICH INCLUDE THE DESIGNATION OF RESPONSIBLE NATIONAL AUTHORITIES AND OPERATIONAL CONTACT POINTS AND THE DEVELOPMENT OF NATIONAL CONTINGENCY PLANS. THE NATIONAL PLAN MUST ALSO INCLUDE (WITHIN EACH PARTY'S CAPABILITY) PRE-POSITIONED RESPONSE EQUIPMENT, TRAINING AND EXERCISE PROGRAMS, MOBILIZATION CAPABILITY, AND DETAILED PLANS FOR RESPONSE AND COMMUNICATIONS.

-11-

THE CONVENTION ESTABLISHES AN OIL POLLUTION REPORTING REGIME THAT REQUIRES SHIPS, OFFSHORE UNITS, SEAPORTS AND OIL HANDLING FACILITIES TO REPORT WITHOUT DELAY TO THE NEAREST COASTAL STATE ANY EVENT INVOLVING A DISCHARGE, A PROBABLE DISCHARGE OR THE PRESENCE OF OIL. SEVERE OIL POLLUTION INCIDENTS ARE TO BE REPORTED TO THE IMO. THE CONVENTION ALSO PROVIDES FOR THE SHARING OF ADVISORY SERVICES, RESEARCH RESULTS, TECHNICAL SUPPORT AND EQUIPMENT TO RESPOND TO MAJOR OIL SPILLS. THE REQUESTING STATE MUST PAY FOR SUCH SERVICES.

THE IMO, SUBJECT TO THE AVAILABILITY OF ITS RESOURCES, IS EXPECTED TO PLAY A CENTRAL ROLE IN CARRYING OUT THE PURPOSES OF THE CONVENTION, PARTICULARLY IN THE AREAS OF INFORMATION SERVICES, EDUCATION AND TRAINING, AND TECHNICAL SERVICES AND ASSISTANCE.

MR. CHAIRMAN, THE GLOBAL RESPONSE COORDINATION MECHANISM CREATED BY THE OPRC CONVENTION WILL MAKE A SIGNIFICANT CONTRIBUTION TO MINIMIZING DAMAGE FROM MAJOR OIL POLLUTION INCIDENTS.

THANK YOU.

TESTIMONY

BY

DAVID USHER

PRESIDENT

MARINE POLLUTION CONTROL

SPILL CONTROL ASSOCIATION OF AMERICA

BEFORE

SUBCOMMITTEE ON OCEANOGRAPHY, GREAT LAKES AND THE OUTER
CONTINENTAL SHELF

SUBCOMMITTEE ON COAST GUARD AND NAVIGATION

SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION AND
THE ENVIRONMENT

10 A.M. THURSDAY, OCTOBER 17, 1991

WASHINGTON D.C.

Thank you, Mr. Chairman.

I want to express my appreciation to these committees for the invitation to testify on the Persian Gulf spill.

My name is David Usher and I am president of the Spill Control Association of America, a professional trade organization composed of more than 100 private companies which handle hazardous material and oil spill control.

I am also president of Marine Pollution Control, of Detroit, a company which has assisted in hazardous material and oil spill control for 25 years. We have participated in most of the world's major oil spills, including the Exxon Valdez.

I have been in the Persian Gulf four times, returning most recently last week.

The first time was during the war when I was honored to be chosen as a member of a U.S. Coast Guard team appointed by the White House to assess the spill.

In the later three visits, I served as chief of the International Interagency Assessment Team of the International Maritime Organization (IMO), a specialized agency of the United Nations concerned with maritime safety and marine pollution.

As you may know, when the world learned of the massive oil slick in January, IMO received offers of help to combat the disaster from several of its member states. It was quickly apparent that the spill was one of the largest ever and that no one government, no matter how well prepared, would be able to handle the enormous protection and clean-up efforts required and that international cooperation and assistance would be necessary.

It was clear that the oil pollution incident was certainly of the severity envisaged in article 7 of the International Convention on Oil Pollution Preparedness, Response and Cooperation, 1990 (OPRC Convention), therefore justifying a request for assistance.

The Secretary-General of IMO immediately made it clear to governments in the Persian Gulf that IMO could, if requested, commence channelling both offers and request of assistance to the region as envisaged by Article 12 of the OPRC Convention.

Upon being informed of this situation, the Kingdom of Saudi Arabia's Meteorology and Environmental Protection Administration (MEPA), coordinator for its national response effort, invited IMO to screen offers of international assistance on its behalf and to ascertain the terms and conditions attached to such offers. Several other Governments of the region also requested IMO to initiate international action to combat the spillage.

IMO responded by establishing a Coordination Centre at its London Headquarters at the end of January. For an initial period of several weeks, the Governments of France, Japan, the United Kingdom and the United States made personnel available on a temporary basis to staff the Centre which was operating on a seven-day a week basis - coordinating offers of assistance.

In order to facilitate the flow of information between IMO, MEPA and the IIAT, and IMO Liaison Officer was established in the MEPA Operations Centre in Dhahran on the basis of staff secondments by the Governments of Denmark and the United States.

To assist other countries of the region IMO also established a liaison officer, seconded by the Canadian Coast Guard, at the Marine Emergencies Mutual Aid Centre (MEMAC) in Bahrain.

Some 17 governments offered assistance through IMO and a number of these offers were taken up by Governments of the region. In addition, several countries assisted countries of the region with the protection of coastal installations and clean-up efforts on bilateral basis. International support for the clean-up effort should therefore be seen as a combination of all these initiatives.

This was the first time such an international cooperative effort was used in an oil spill crisis and an excellent real test of the OPRC Convention.

The Persian Gulf oil spill crisis, as tragic as it was, was an example of cooperation never witnessed before. The prompt action taken by the Persian Gulf States, the international community and IMO certainly helped to minimize the effect of the spill.

On the spill itself, before I describe some of the work accomplished in the Gulf, I want to commend the U.S. Coast Guard, the National Oceanic and Atmospheric Administration (NOAA), the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers for the work each of these agencies contributed in the Gulf.

Each provided the most professional assistance possible, were totally committed, offering expert advice and were excellent representatives for the U.S.

As to the status of the oil cleanup, let me indicate that I believe many of the highly visible spill areas have been cleaned up.

I make this assessment guardedly. One major question always faced by governments, companies and individuals such as those I represent is: How clean is clean?

Obviously, oil remains. But overall I believe the Gulf waters are generally free of oil and most of the work yet to be completed is on the shoreline.

The efforts to clean up the spills were made more difficult by three major contingencies:

1. The spill occurred during the war and, obviously, we were hampered by live ordinance and the hostilities in the area. Ordinance is still hampering efforts to assess pollution impact to the Kuwait coastline.

2. The Gulf waters are very shallow, not permitting the use of most appropriate vessels designed for at sea oil spill cleanup.

3. Quick sand in-and-around the Gulf waters also was a factor.

But despite these difficulties, the IMO team managed to make substantial progress and make it relatively quickly, considering the circumstances and the limited financial resources available.

I also want to point out the—contrary to conventional wisdom—the environmental damage as a result of the oil spill appears to be less than anticipated.

The damage in the Gulf appears to have been minimal. There have been no catastrophic reports of environmental damage.

Nature, not man, has performed the lion's share of the clean up. The lessons of oil spills indicate that human activities be limited to low energy, environmentally sensitive areas or highly populated ones.

Occasionally, human activity, although well intentioned, can be more damaging to the environment than the actual spill, especially in areas where human activity was minimal prior to the accident.

Of growing concern is the situation in war-torn Kuwait.

The hundreds of oil well fires set during the war are posing a major ecological crisis. Millions of gallons of crude oil are spilling from these wells.

These spills are creating "oil lakes" some hundreds of yards long, some of which are contained by earthen berms. Ground penetration is a possibility and should breaks occur in the berms, we may witness new complexities demanding increased responses in a country already financially strapped by the cost of rebuilding.

It is essential that the international community assess and address the funds and resources needed to bring the "oil spill" crisis in Kuwait under control.

The spill contributed to a global awareness of the need for an international approach to cope with major environmental disasters.

An international approach to oil spill containment and cleanup was always considered desirable but economic, political and geographic issues were a barrier to the establishment of such an international agency. Exxon Valdez was the catalyst which finally broke a long-time logjam and the OPRC Convention which was developed and adopted in its aftermath represents the global consensus for the way forward.

The international efforts during the Persian Gulf spill can be considered another step forward in the process of international cooperation in such accidents.

The countries which assisted either directly or otherwise with funds or with equipment have made major contributions in cleaning up the spill.

Much progress and many lessons have been learned as a result of the spill:

—Present spill response equipment is generally a mainstay of containment efforts in such accidents.

---While no one can predict where or when a spill will occur, we should strategically locate equipment and trained, professional personnel in key areas around the world. A strong, highly-skilled spill response community already exists in the U.S. and Europe.

---We must refine and build on international cooperation now that IMO initiatives have been "tested" and proven to be effective. In this case, I urge that the U.S. ratify the OPRC Convention treaty as soon as possible. The U.S. can demonstrate international leadership by being the first to ratify and which will serve as a catalyst for other countries to follow this lead.

---Organizations responsible for cleanup must use the most sophisticated public communications skills to inform the public. Media reports, in many instances, have given misleading impressions.

Let us hope that the Gulf spill, as unfortunate as it was, can be an historic environmental landmark leading to the creation of more sophisticated response systems worldwide.

(I would be happy to answer any questions you may have).

FRIENDS OF THE EARTH™
Environmental Policy Institute
 OCEANIC SOCIETY



STATEMENT OF DR. BRENT BLACKWELDER
 ACTING PRESIDENT, FRIENDS OF THE EARTH, USA

BEFORE A JOINT HEARING OF THE SUBCOMMITTEES ON
 OCEANOGRAPHY, GREAT LAKES, AND THE OUTER CONTINENTAL SHELF;
 COAST GUARD AND NAVIGATION; FISHERIES, WILDLIFE
 CONSERVATION AND THE ENVIRONMENT
 COMMITTEE ON MERCHANT MARINE AND FISHERIES
 U.S. HOUSE OF REPRESENTATIVES

ON ENVIRONMENTAL EFFECTS OF THE PERSIAN GULF CONFLICT

OCTOBER 17, 1991

Mr. Chairman, Members of the Subcommittees:

I am Brent Blackwelder, Acting President of Friends of the Earth, USA. We are a national, nonprofit environmental organization founded in 1969. Two years ago, we merged with the Environmental Policy Institute and the Oceanic Society. We have 50,000 members and supporters in this country, and affiliated organizations in 47 countries throughout the world.

We greatly appreciate your invitation to share our thoughts on the environmental effects of the Persian Gulf conflict. Our statement this morning will highlight the status of key environmental issues in the region, and discuss the findings of the scientific team we sent to the region last June. Because of this Committee's interest in marine environments, we also will offer a detailed analysis of the Persian Gulf environment. This analysis was prepared by Boyce Thorne-Miller, the Senior Scientist of our Oceanic Society Project.

I. FINDINGS AND RECOMMENDATIONS ON KEY ENVIRONMENTAL ISSUES AFFECTING IN THE REGION

The Gulf War resulted in a number of environmental disasters, with most public attention appropriately devoted to the unprecedented oil fires. Earlier in the year, Friends of the Earth and other environmental advocates recommended much more aggressive action to extinguish the fires and prevent months of serious pollution. Over the last few months, the number of fire fighting teams has been increased, and progress in quenching the fires has accelerated. Nevertheless, serious damage has

218 D Street SE
 Washington, DC 20003
 202-544-2600
 202-543-4710 (fax)
 650-192-5483 (telex)
 telex: EcoNet: D)

been done as a result of the delays in fire fighting. Indeed, the National Oceanic and Atmospheric Administration (NOAA) estimates that as much oil coming from the burning wells has entered the Gulf from the air as was discharged directly as a result of oil spills.

Even after the fires are out, a huge amount of oil -- probably over 7 billion gallons -- will still be sitting in lakes and ponds, posing enormous long-term threats to the environment.

The oil spilled directly into the Gulf was at least twenty times greater than the *Exxon Valdez* spill. Although about one-sixth of the oil was recovered, the remainder has contaminated mangrove and wetland areas along 200 miles of coast. A great deal of work must be done trying to analyze the impacts of the spills on fish and marine mammals, on coral reefs and seagrass beds, and on other aspects of the marine ecosystem.

Friends of the Earth believes it is essential that a significant amount of any reparations be devoted to environmental restoration and to building a better environmental infrastructure and education program to ensure that long-term improvements are made in environmental quality in the Gulf region. Environmental agencies in the Gulf countries are not adequately funded, and essential research has not been forthcoming. Those in the region who deal with environmental matters deserve the strong support of the United States in seeking a fair percentage of the reparations.

Richard Golob, a member of the FOE international team and publisher of the *Oil Pollution Bulletin*, just returned from a series of meetings in Kuwait concerning compensation for the damages of the war. He reports that little attention is being given to environmental issues in discussions on reparations. This Committee could play an important role by ensuring that the United States representatives to the Claims Commission -- established by UN Security Council Resolution 687 -- raise the important environmental issues as the Commission carries out its assignment.

We have compiled the following status report on key environmental issues affecting the region:

- * Government estimates put the number of oil wells damaged or set on fire at 749. As of October 15th, about 596 fires had been extinguished.
- * The oil spill was the largest in history, estimated at 8 to 8 million barrels. NOAA estimates that as much oil has entered the Gulf from the air as a result of the oil fires as was discharged directly.

- * The volume of oil spewing from the ground in Kuwait throughout the spring was probably about 5 million barrels a day. The amount of oil which has spilled out on the desert to form rivers and lakes of oil is probably over 180 million barrels. Some of these lakes are on fire. Air pollution from oil lake fires stays close to the ground, causing potentially more severe local health problems.
- * The number of teams fighting the fires has been increased from 4 to 15 with the expectation that about 28 will be fully involved in the fall. The pace of extinguishing fires has reached roughly 4 per day.
- * Friends of the Earth earlier expressed concern that the large number of fires at high pressure wells would be difficult to extinguish. We now have received reports that pressure in many well fields is dropping which will make the task of extinguishing these fires much easier.
- * Professor Heluk Ozkaynak of the Harvard School of Public Health and member of the Friends of the Earth team estimates about a 10% excess mortality from the current air pollution levels. Autopsies of Kuwaiti sheep show severe damage to their lungs from the pollution.
- * The pollution plume has spread generally in a southeasterly direction covering large portions of Saudi Arabia and the Arabian Gulf. The plume has risen much higher than government predictions. Air quality over the Gulf has been compared to that over a city like Tokyo or Los Angeles.
- * Wildlife losses are difficult to estimate. Many birds have mistaken oil lakes for fresh water and landed on them. Other birds have flown into dense smoke clouds and dropped dead out of the sky. Some islands important to wildlife were hit by oil slicks. Although the beaches on these islands have been cleaned, those walking the waters surrounding the islands report that each footstep brings up fresh oil.
- * The impacts of the war on the deserts are more difficult to determine in many places because decades of overgrazing have severely stressed desert vegetation and damaged fragile ecosystems. Around the oil fields in Kuwait, the damage to the desert has been so severe that it will likely be more than a century before there is recovery.
- * The environment is being forgotten as claims for the compensation fund are lined up. It appears that roughly \$2 billion annually might be available from Iraqi oil sales to compensate for damages but that most of this will be spent dealing with individual claims and rebuilding of infrastructure.

II. FRIENDS OF THE EARTH'S SCIENTIFIC MISSION TO THE GULF

On May 29, 1991, Friends of the Earth International (FOEI) sent a team of distinguished scientists to the Gulf to examine first-hand the environmental consequences of the war and to prepare recommendations for short-term cleanup and long-term rehabilitation.

The FOEI team was headed by the Honorable James George, former Canadian Ambassador to Kuwait, and included specialists on air pollution and public health, desert ecology, oil pollution, and wildlife protection (see attached roster). The team travelled to Saudi Arabia at the invitation of the National Commission on Wildlife Conservation and Development and to Kuwait at the invitation of the Kuwait Environmental Protection Council, both government agencies. Friends of the Earth was, to the best of our knowledge, the first nongovernmental environmental organization to be officially invited to Kuwait to examine the situation.

The FOEI team met with officials in both countries and carried out extensive inspections of the damage from the war, including a flight over the entire Saudi coastline effected by the oil spills, on-the-ground inspection of substantial portions of coast, a flight over the northern and southern oil fields of Kuwait, on-the-ground inspections of the Kuwaiti oil fields, and a flight to the top of the oil smoke plume. The team's extraordinary aerial videotape of the coastline and the oil fires provided new perspectives on the magnitude of the environmental catastrophe.

Flying the 200 miles of coast (which contains roughly 400 miles of shoreline), the team noted that almost every salt marsh and mangrove swamp had been heavily oiled. Along the coastline from Abu Ali north to the Kuwait border one could see that enormous amounts of oil sunk to the bottom. Cleanup operations focused on removing oil from several bays north of Abu Ali. The team was concerned that considerable quantities of oil have continued to leak into the Gulf after the war and that efforts both to document this development and to halt the leakage were totally inadequate.

The team's aerial videotape footage of the Kuwaiti oil fields revealed massive amounts of oil spewing over the land and forming huge lakes of oil, some of which contained as much as 100 million gallons of oil. The FOEI team observed these lakes catching on fire – an unanticipated phenomenon. The huge jets of snowy-white steam mixed with the dense black smoke in some of the fires revealed the presence of water with the oil, indicating damage to underground reservoirs. The longer the fires burn, the more difficult many become to extinguish. The team also found that the failure to deal rapidly with mines and boobytraps hindered essential access to the fires.

On June 8, the FOEI team flew to the top of the smoke plume some 120 miles south of the Kuwait border and found that the plume reached a level of 18,000 feet.

This observation, documented on videotape, stood in sharp contrast to statements made by representatives of the U.S. Government in testimony to the Congress on April 10 and June 11 that the height of the plume is between 8,000 and 12,000 feet. These differences were extremely important because of concerns that the plume could rise to greater heights and have significant regional or global climatic effects.

The team was in fundamental disagreement with Environmental Protection Agency Administrator William K. Reilly's statements during press conferences in Kuwait and Saudi Arabia that the smoke from the burning wells would not have serious health consequences. According to team leader Ambassador George, "The experience of any observer on the ground tells you that something very bad is happening to your body: your eyes and skin itch, your clothes are spotted with oil, everything tastes and smells of oil."

III. ANALYSIS OF PERSIAN GULF ENVIRONMENT

The Persian Gulf ecosystem is characterized by stressful physical and chemical conditions. It is an ecosystem that, for the most part, is living at or near its limits of tolerance. Gulf waters are hypersaline, extremely hot in the summer and cool in the winter, and they are considered among the most polluted marine waters in the world. They are populated by a diversity of species that are mainly tropical, many of which are found at their northernmost limit of distribution.

A. The Physical Environment of the Gulf

The Persian Gulf is a marine environment characterized by extremes. The coastal water temperature ranges from 10 to 36 degrees centigrade (50 - 95 degrees fahrenheit) annually. Temperatures in the northern Gulf are cooler, by a few degrees, than the southern Gulf. Air temperatures in Kuwait range between below freezing to more than 50 C (120 F). The intertidal marine communities in the northern Gulf may be exposed to frost in January and temperatures up to 55 C (130 F) in summer. The tidal range in the Gulf varies from about 1 to 4 meters (3 - 12 feet). In areas where the slope of the coastline is very gradual, the intertidal zone may extend out a mile or more from the high tide line. Due to high evaporation rates during the warm periods and relatively low inflow of fresh water, the salinity of Gulf water is exceptionally high, ranging from 38 - 42 parts per thousand (compared to about 35 parts per thousand in the Indian Ocean outside the Gulf). The Gulf is shallow, averaging only 110 feet (a maximum depth around 350 feet) and with extensive shallow areas along the coast.

During the winter and spring, dominant winds are out of the northwest. The circulation in the Gulf is counterclockwise. Wind and circulation patterns are important to the dispersal of planktonic eggs and larvae to replenish the coral reefs and

seagrass beds and other benthic communities. They will also determine the direction and rate of dispersal of spilled oil.

The Gulf coast line ranges from extensive tidal mud flats at the head, forming the delta for the Tigris and Euphrates Rivers (which join to form the Shatt al Arab), to the steep rocky Iranian coast, the rocky cliffs of the Emirates and the mountains of Oman. Most of the west coast is relatively low lying, with extensive sand beaches and flats along the coast of Saudi Arabia and beyond. The western coastline is broken by numerous creeks and beds, but these carry virtually no freshwater runoff except during heavy rains. Bays and small offshore islands are common along this shore. The Kuwait and Saudi Arabia coast line includes areas of sandy beaches, mud flats, mixed sand and mud, and a few areas of exposed rock. The eastern rocky coast of the Gulf is indented by small rivers.

Added to these physical conditions is the continual influx of oil into Gulf waters, both natural and man-induced. Because this is an oil rich area there are natural seepage areas. For example, the island Qaruh is characterized by the constant smell of oil. In fact, the island was named for that (Qar meaning oil) long before human exploitation of the oil resources began.

Far greater than any natural seepages are the frequent leaks and spills from the drilling, storage and shipping activities that dominate the Gulf region. Oil spills have occurred frequently since the sixties, but have increased significantly since the late seventies. The Iran-Iraq conflict, in particular, caused undetermined quantities of oil to be released into Gulf waters. Numerous small spills have occurred along with several large spills, most notably the Noruz spill which reportedly discharged about 80 million gallons into the Gulf. The frequency of spills has varied, but it is reported that during the latter years of the Iran-Iraq war, there was damage to a vessel or some oil facility at least once a week if not more often.

B. Sea Life in the Persian Gulf

The temperature and salinity conditions in the Gulf create a highly stressful environment for sea life. The access to the Indian Ocean is through the Strait of Hormuz into the Arabian Sea. Thus, marine species have populated the Gulf from more tropical waters outside; and natural communities are composed of those species that have been able to adapt to the rigorous physical conditions in Gulf waters.

Because the source of species populating the Gulf is the Indian Ocean, most species found there are tropical. Consequently, some of the species, such as coral and their associated reef species, are found at their northernmost points of distribution in waters off Kuwait. The temperate species found in the Gulf are generally those able to tolerate high temperatures and thus able to disperse from temperate environments in the southern hemisphere, across warm tropical waters and into the

Gulf. However, other species have likely been introduced in ballast water from tankers that have taken on water in other ports.

The diversity of species is not exceptionally high in the presence of these environmental conditions, but that does not negate the importance of the diversity that is there. Diversity increases from north to south with closer proximity to the Strait of Hormuz and exchange with the Indian Ocean, home to the greatest known diversity of marine species in the world. The Gulf is visited by numerous migratory species and the influx of larvae from the outside can replenish populations of Gulf species. Circulation within the Gulf is also important to the recruitment of larvae from one population to replenish another. A few species that are rare or endangered worldwide can be found in the Gulf. These include the hawksbill and green turtles, dugongs (sea cows), a few endemic reef species, and a very rare fish, the mud skipper, found on intertidal mudflats in northern Kuwait.

For the most part, the species found in the Gulf are not unique to that area, but it is reasonable to expect that many Gulf populations are genetically distinct from their counterparts in other areas. For instance, most corals cannot tolerate the maximum temperatures or the temperature range found in the Gulf; yet the Gulf populations persist, suggesting that they are genetically adapted to the temperature and salinity extremes of the Gulf.

Because most species are living at their limit of tolerance to salinity, temperature and/or temperature fluctuation, relatively small additional environmental stresses could cause populations to collapse. For example, an occasional combination of exceptionally low tides and exceptionally low temperatures has been known to kill off the shallow portion of some coral reef communities. The extensive mudflat ecosystems would also be susceptible to unusually stressful conditions during periods of very low tides, although many of the species in those areas are likely tolerant to large oscillations in their environments. We do not have information as to how long it takes to reestablish a community in the Gulf once it has collapsed. Related to that, it is also not known to what extent these Gulf communities rely on outside waters for replenishment and how well or how rapidly invading populations from outside the Gulf can adapt to the extreme conditions found there.

There are several types of habitats with their associated communities common in the Gulf, including those characterized below:

- * *Intertidal mudflats* – There are extensive areas of mudflats exposed at low tide. These are inhabited by a variety of invertebrates (snails, crabs, marine worms, etc.) that can tolerate long periods of exposure. The upper reaches of the mudflats are exposed to the air longer than they are covered by water. These areas are feeding grounds for a number of shorebird species that eat the mudflat fauna. Some fish are also found on the wet mudflats – including sea fish

known as the mudskipper, which is endemic to the region. Mangroves and saltmarshes may be associated with the mudflats, especially in embayments and river estuaries.

- *Rocky shore* – Rocky shores with their attached flora and fauna are more common along the east shore than the west, although there are small areas of rocky outcrops in Kuwait and Saudi Arabia. These exhibit sharp patterns of zonation relative to the length of exposure as the tide recedes, and offer a variety of habitats, each with their own set of species – e.g. tide pools, rock faces, protected undersides of rock, etc.
- *Seagrass beds* – This type of habitat is found along most of the western coast and in certain locations along the eastern coast of the Gulf. These are submerged meadows of flowering plants known as seagrass or turtlegrass. They harbor a variety of animals that feed directly on the grass, on the decaying pieces of grass, on the algae associated with the grass or they may feed higher on the food chain but find refuge in the grass. The seagrass beds of the Gulf are important in their role as nursery grounds for numerous offshore species including many economically valuable species such as shrimp, mullet, mackerel, seabream, etc. Dugongs and sea turtles are among the rare or endangered species that are found here.
- *Coral reefs and islands* – The coral reefs of the Gulf are not the most diverse in the world, but they are nevertheless pockets of relatively high diversity in the Gulf. A few very rare reef species have been identified here; but the reef communities here are most interesting because they are at the northern most limit of their range and they have adapted to unusually harsh temperature conditions. The coral islands associated with the reefs are sanctuaries for a number of sea birds including cormorants, several species of gulls, and others.
- *Subtidal bottom (soft and hard bottoms)* – Off shore from the seagrass beds the bottom community is dominated by several seaweeds that provide shelter for the adult stages of shrimp as well as other bottom dwelling animals. Much of the Gulf is shallow enough to allow light to reach the bottom to support the growth of algae.
- *Pelagic/planktonic communities* – The water column supports a moderately productive phytoplankton community. The plankton combined with the seagrass beds provide the base of a food chain productive enough to support a viable fishery of a number of kinds of fish and shellfish, including shrimp, grouper, mullet, mackerel, seabream, butterfish, tuna, anchovies, sardines, and several others. All the countries around the Gulf fish these waters both for local markets and for the export market.

- * *Microbial communities* – An important part of seagrass bed ecology is the decomposition of dead plants. This is a significant pathway by which the seagrass production enters the marine food chain. In addition, the presence of natural oil seepage zones in the Gulf has no doubt allowed a natural community of microbial oil-consumers to be established. (Microbial mats are commonly found in oil-rich seabeds around the world.)

C. Fisheries in the Gulf

More than a hundred species of fish and shellfish in the Gulf are exploited on a commercial basis. At least in Kuwait and Saudi Arabia, the traditional subsistence fishermen have largely been replaced by commercial boats owned by nationals but operated by foreign crews. This is less true in Iran, where artisanal fishermen still ply the waters, particularly off the southern Iranian coast.

The FAO yearly statistics list about 50 species or classes of animals that are fished, including groupers, snappers, grunts, croakers, mullet, sea breams, butterfishes, mackerel, tuna, sailfin, sardines, sharks, shrimp, and crabs. The shrimp fishery is one of the major fisheries and accounts for many of the fish caught as well (incidental catch by shrimpers include many useable fish as well as fish that is discarded). During its peak, the shrimp fishery of the Gulf amounted to about 15-20,000 tons per year. Currently it is closer to 10,000 tons per year, but there is indication in the Kuwait fishery that improved management practices are increasing the yield. That country recorded a catch of over 3,000 tons last year, which represented a significant increase over only a couple of years.

The extensive seagrass beds are important nursery areas for the shrimp and many of the other fisheries species. The shrimp, for example, spawn in deeper waters but the planktonic larvae drift to the grass beds and proceed through the various developmental stages until they become immature adults, at which time they settle to the bottom and most move back out into deeper water. Mullet and many other fish actually come into the seagrass beds to spawn. Spawning season for the majority of these species is in the late winter to early spring, so during the end of January, February and March the most sensitive stages in their life histories are in the water and vulnerable to environmental hazards.

How long it takes a fishery to recover from overfishing or environmental damage depends on the species, its fecundity and the average life span, and the time it takes for outside sources (i.e. larvae or juveniles from different populations within or outside the Gulf) to replenish the depleted populations. The shrimp, for example, lives not much more than one year and produces large numbers of eggs that float in the plankton and readily disperse to various seagrass beds around the Gulf. It appears that populations of these species can reestablish themselves within a year or two, but other species may require longer.

Compared to other fisheries worldwide, the Gulf is only moderately productive. Nevertheless, the fishery represents an important source of food for the nations of the region as well as income from exports, and it provides the only renewable resource the people of that region have.

D. The Effects of Oil Pollution and Catastrophic Spills

We do not have much information on the effects of chronic oil pollution or how many species have been eliminated by its presence. Nor do we know to what extent the animals that persist in this environment are unusually tolerant to chronic low-level hydrocarbon pollution. We do have some information about the effects of some of the larger oil spills, such as the Noruz spill in 1983, which killed marine mammals (porpoises and dugongs), sea turtles, sea birds, sea snakes and fish.

The Noruz oil spill continued for several months, beginning at the end of January. Especially during the hot summer, the highly toxic volatile portion of the oil evaporated rapidly and leaving behind the heavier component which drifted and sank in large mats and tar balls and worked its way into sediments. Air breathing sea life is particularly vulnerable to the evaporating toxins, pelagic and planktonic life to dissolved hydrocarbons and benthic life to any toxic materials ending up in the sediments. The relative toxicity of these three components decreases from the volatile to the dissolved to the solid phases. The damage caused by past oil spills to less obvious submerged and planktonic plants and animals has not been documented, but larval stages are known to be especially susceptible to the toxic effects of dissolved hydrocarbons. Furthermore, the quality of the fish or shellfish would become questionable due to added loads of hydrocarbons in the tissue.

A gigantic oil spill such as what occurred at Mina al Ahmadi during late winter can be expected to take a toll on both adult and larval stages of important fisheries species, which could affect the catch for several years. Oil spills are also lethal to intertidal areas such as the broad mudflats. The small invertebrates in the muds die or become contaminated with oil and the wading birds feeding there ingest these contaminated animals so that they in turn die or become ill. Coral reefs exposed at very low tides would be smothered by oil left behind by the receding water.

In shallow areas of restricted exchange with ocean waters, the effects of an oil spill may be more extensive and longer lasting, at least from the perspective of those measuring the effects. The Gulf is shallow and well mixed, so much of the oil is mixed and dissolved into the water column and some of it is finally mixed down into the sediments, where it can reside for years, inhibiting growth of benthic organisms. The extensive seagrass beds are particularly vulnerable, as they serve to trap the oil.

Much is made of the fact that the highly toxic volatile fraction evaporates rapidly, especially in warm waters. However, the Gulf waters are not always warm and the

dynamic mixing processes will maximize the dissolution of hydrocarbons. Thus, while a large portion does evaporate (killing many air-breathers as it does so), the damage that can be caused by the remaining dissolved and solid material should not be underestimated.

In addition, organisms contaminated by hydrocarbons (ingested or absorbed) often become less resistant to other environmental stresses. Since this is an environment of extremes and many of the species are functioning very close to their tolerance limits, the effect of the oil contamination in reducing their physiological tolerance to their natural environment could be devastating. If communities collapse from the added stress, it is not known how long it would take for them to become reestablished with their same level of diversity -- a year? a decade? several decades?

Thank you for the opportunity to present our views.

FRIENDS OF THE EARTH GULF ASSESSMENT TEAM

■ **JAMES GEORGE**, team leader, has served as Ambassador from Canada to Kuwait, Oman, Iran, and the United Arab Emirates; Canadian High Commissioner to India; and Canadian Deputy Permanent Representative to the United Nations.

■ **TONY BURGESS**, desert ecologist, works with the U.S. Geological Survey in Tucson, AZ, and serves as a consultant to numerous public and private organizations concerned with the preservation of desert ecosystems.

■ **RICHARD GOLOB**, expert on oil pollution control, is president of World Information Systems (Cambridge, MA) and publisher of *Glob's Oil Pollution Bulletin*, a biweekly newsletter on oil pollution prevention and control technologies worldwide.

■ **BURR HENEMAN**, independent environmental consultant, is director of the U.S. Section of the International Council for Bird Preservation; director of Audubon Canyon Ranch; consultant to the U.S. Marine Mammal Commission and the Center for Marine Conservation; author of *The Exxon Valdez Oil Spill: A Management Analysis*.

■ **HALUK OZKAYNAK**, expert on air pollution and public health, is a physicist on the faculty of the Harvard University School of Public Health, where he has developed models to analyze and assess population exposures and related health risks caused by various airborne pollutants.

■ **ADAM TROMBLY**, physicist and climatologist, is an authority on global environmental modeling, director of Project Earth, consultant to the Aspen Institute for Advanced Studies, advisor to the United Nations Environment Programme, and developer of innovative techniques to extinguish oil fires.

■ **GABRIELE ZANINI** is an expert in environmental impact assessment, particularly regarding the effects of air pollution and meteorological events on coastal zones and wetlands. He is on the staff of ENEA (the National Committee for Energy Research) in Bologna, Italy.

For further information, contact:
Srent Blackwelder or Carla Gaffney
Friends of the Earth
218 D Street SE, Washington DC 20003

Phone: 202-544-2800
FAX: 202-543-4710

FRIENDS OF THE EARTH 5-94-91

WORLD INFORMATION SYSTEMS

P.O. Box 535, Cambridge, Massachusetts 02238, U.S.A.
Tel: 617-491-5100/Fax: 617-492-3312/TWX: 710-320-1628

Statement of
Richard S. Golob
President, World Information Systems
Publisher, Golob's Oil Pollution Bulletin
Before the
Subcommittee on Oceanography, Great Lakes, and the Outer Continental Shelf
Subcommittee on Coast Guard and Navigation
and the
Subcommittee on Fisheries and Wildlife Conservation and the Environment
Committee on Merchant Marine and Fisheries
U.S. House of Representatives

17 October 1991

Thank you for the opportunity to speak this morning about the environmental aftermath of the Gulf War and specifically about compensation claims for environmental damages. My name is Richard Golob. I am president of World Information Systems, an environmental consulting and publishing company in Cambridge, Massachusetts. I also serve as publisher of Golob's Oil Pollution Bulletin and Hazardous Materials Intelligence Report, two newsletters that cover the fields of oil pollution control and hazardous waste management, respectively.

In late May and early June, I visited Saudi Arabia and Kuwait as part of a multidisciplinary team, which was organized by Friends of the Earth International. At the invitation of the Saudi National Commission for Wildlife Conservation and Development and the Kuwait Environment Protection Council, we assessed from the ground and by helicopter the environmental damages from the Gulf War.

Then, earlier this month, I returned to Kuwait at the invitation of the Kuwait Environment Protection Council and the Regional Organization for the Protection of the Marine Environment, or ROPME. During my two-week visit, I made a presentation on damage compensation to environmental officials of the Gulf nations and discussed with Kuwaiti officials a strategy for filing compensation claims for environmental damages suffered. Once again, I had an opportunity to assess the environmental damages in Kuwait from the ground and by helicopter.

At sea, in the air, and on land, the environment in the Gulf Region continues to suffer serious damage. And although the situation has improved since my initial trip, the ongoing environmental disaster in the Gulf Region is unprecedented in world history.

Over nine months have passed since the Iraqis discharged the world's largest marine oil spill into the Gulf, and still massive amounts of oil continue to contaminate the Gulf coastline. And almost eight months since the Iraqis sabotaged the Kuwaiti oil wells, the world's worst air pollution episode continues to send toxic pollutants throughout the Gulf Region. In

addition, up to 200 million barrels of oil have collected in oil lakes on the Kuwaiti oil fields, representing the world's largest oil spill on land.

In total, according to our calculations, up to 1.3 billion barrels of oil have either burned or spilled from the damaged oil wells to date. And compared to the 260,000-barrel spill from the tanker Exxon Valdez in Prince William Sound, Alaska, in March 1989, over 5,000 times as much oil has been lost in Kuwait. Simply stated, this environmental disaster has no parallel in our previous experience.

And yet, the Gulf War's environmental aftermath seems to have become the forgotten war. The coalition members had the necessary resources and funding to mobilize rapidly to wage the Gulf War, but they have sadly not organized a concerted response to the war's environmental aftermath. That aftermath is not merely a local or regional issue. It is an international problem, and unfortunately the coalition members have not fulfilled their responsibility in actively assisting the Gulf Region with people, equipment, and funding, in an effort to win the war to save the Gulf environment. During my trips to Saudi Arabia and Kuwait, as I surveyed the damaged coastline and oil fields, it seemed as if the coalition's military victory had already turned into a resounding environmental defeat.

The international efforts to assist in the environmental cleanup and restoration in the Gulf Region have also achieved limited success due to funding problems. The International Maritime Organization was able to collect only \$5 million from the world community for a special fund to support oil spill cleanup projects in the Gulf Region. And yet the Saudi government has estimated that the cleanup along its contaminated coastline will cost over \$450 million.

When the United Nations Environment Programme solicited contributions for the first phase of its Inter-Agency Plan of Action for the ROPME Region, it received only \$2.6 million of the \$3.5 million requested, and as a result, the program suffered severe delays. It is important to note that the United States did not make any direct contributions to either the International

Maritime Organization fund or the United Nations Environment Programme plan.

And in December, the United Nations plans to hold a funding strategy conference to discuss the funding needs of the Gulf Region to undertake the Inter-Agency Plan of Action. This conference will serve as a prelude to a possible donors conference, where participating countries might decide to pledge funds. However, the outlook for funding from the international community is grim. Last month, in fact, the United Nations held a donors conference in order to raise about \$650 million for Chernobyl; unfortunately, the participating countries pledged less than \$10 million.

Without significant support from the coalition members in specific and the international community as a whole, the Gulf nations need to seek alternate methods for securing the funds needed to conduct the environmental cleanup and restoration activities. Security Council Resolution 687 may offer a solution, although it still presents many difficulties for environmental claimants.

Under Security Council Resolution 687, the international community found that the Iraqi government is responsible for the war-related environmental damages in the Gulf Region and that the polluter must pay. According to Resolution 687, Iraq is "liable, under international law, for any loss, damage, including environmental damage and the depletion of natural resources, or injury to foreign governments, nationals, and corporations, as a result of Iraq's unlawful invasion and occupation of Kuwait." In this way, Resolution 687 established the right of the Gulf nations to seek compensation from Iraq through the United Nations Compensation Fund for their war-related environmental damages.

In order to ensure a successful claim, each of the damaged Gulf nations needs to develop a strategy for assessing the environmental injuries suffered and then determining the monetary value of those damages. With the passage of time, however, an accurate damage assessment will become increasingly difficult to undertake.

To date, none of the Gulf nations is reported to have undertaken a

comprehensive environmental damage assessment as a basis for compensation claims. Since the end of the war, numerous scientific groups from both within and outside the Gulf Region have conducted studies to monitor and assess the environmental and public health situation, but none of these studies has been directed towards placing a monetary value on the impacts identified. Most significantly, it seems that the Inter-Agency Plan of Action for the ROPME Region does not seek to determine the monetary value of the impacts identified.

And yet a damage assessment designed to develop compensation claims would represent an excellent investment of money and resources. In past environmental damage compensation cases, the amount of compensation received represents a large multiple of the amount of money invested in developing the claim. Especially, in Kuwait and Saudi Arabia, given the severity and extent of the environmental devastation, a damage assessment program would undoubtedly generate a significant return on the initial investment.

In Resolution 687, the inclusion of environmental damages among the claims categories represents an effort by the international community to ensure that the Gulf nations have the necessary resources to restore their environment and care for their people's health. It also serves as a symbol of the international outrage against Saddam Hussein and the Iraqi government for their devastation of the Gulf environment.

By holding Iraq liable for the resulting damages, Resolution 687 has made it clear that the international community will not tolerate similar acts of environmental aggression in the future. At the same time, by specifying environmental damages as a claims category, Resolution 687 has shown that the international community has elevated the environment to a priority issue.

And yet, among the claims categories, the Claims Commission in Geneva appears to have relegated the environmental claims to the lowest priority position, ranking them behind individual claims, business claims, and government claims. As a result, the Gulf nations are not likely to receive any compensation for their environmental damages because the Compensation Fund

will pay out its limited amount of money to the claims categories with higher rankings.

Under these circumstances, it is possible that Kuwait, Saudi Arabia, and other Gulf nations will decide not to proceed with the development of a compensation claim for environmental damages. This outcome would represent a direct contradiction of the international community's intent in specifying environmental damages as a claims category, and would generate an international outcry against the ranking of the claims categories by the Claims Commission. In addition, without the development of environmental compensation claims by the damaged Gulf nations, the world will never know the true extent and severity of the environmental crimes perpetrated by the Iraqi government.

As many of the environmental damages and the associated public health damages may not become apparent for many years after the last well fire is extinguished, the Claims Commission has the opportunity to allocate monies from the Compensation Fund to establish an environmental and public health effects institute in Kuwait. The objective of this institute would be to conduct the long-term monitoring and analysis of the environmental and public health aftermath of the Gulf War. The research conducted would serve as an early-warning system for any unusual trends and would also help ensure the early detection and treatment of any health problems that might develop.

While it is understandable that individual claims would receive the highest ranking among the claims categories, the reason for subordinating the environmental claims to perhaps the lowest ranking is not clear. The quality of an individual's life is dependent on the quality of that individual's environment, and if the ranking of claims categories depends on their relative importance to the individuals damaged, then the environmental claims should receive a similar ranking to that of the individual claims.

At the same time, even if the environmental and public health claims receive a higher category ranking, Kuwait, Saudi Arabia, and other damaged Gulf nations will still not likely receive compensation for environmental

damages unless the Claims Commission gives them a preferred position with respect to other damaged nations. It is clear that Kuwait has suffered the most extensive damages in the Gulf Region as a result of the war, but without a preferred position, Kuwait will not receive the portion of the compensation available that it deserves.

In order to remedy the current situation, the United States has an opportunity to work through its representative on the Governing Council of the Claims Commission to establish the environment as one of the Commission's priority concerns. In addition, together with the United States, the governments of Kuwait, Saudi Arabia, and the other Gulf nations need to work expeditiously to change the priority ranking of environmental damage claims within the Claims Commission. Furthermore, the Governing Council of the Claims Commission also needs to recognize the priority ranking of claims from the Gulf Region itself, especially from Kuwait and Saudi Arabia, and revise their procedures accordingly.

Without these changes, Kuwait, Saudi Arabia, and the other Gulf nations will not receive the compensation necessary to restore their environment and care for their people's health. At the same time, the Gulf nations will not gain any sense of justice for the unprecedented environmental damages that they have suffered.

Thank you.

VOL. CCXVIII NO. 75 ★

Legacy of War

The Battles Are Over, But Gulf Environment Still Fights for Its Life

Oil Saudi Arabian Beaches And Tarred Desert Lands Are Given Scant Attention

Progress Against Well Fires

By KEN WELLS

Staff Reporter of THE WALL STREET JOURNAL
ADAFI BAY, Saudi Arabia—In the white-hot part of the desert day, a dozen workers struggle with rakes and shovels to rid a beach here of mounds of sea grass saturated with acrid crude oil.

Nearby, a bulldozer scrapes through a foot-thick frosting of oil that runs in a wide ribbon as far as the eye can see. In a few days, these efforts will have given a two-mile stretch of this shore, near the port town of Jubail, back to the bathers and the birds.

That's two miles down—and about 300 miles to go.

The world's biggest oil spill—six million barrels—has largely disappeared from headlines but not from Saudi Arabia's shores. Eight months after Saddam Hussein unleashed the first known major act of eco-terrorism, much of the kingdom's coastline, from the port city of Jubail north to Khafji, remains smothered by crude.

A Long List

The mess is catastrophic: Whole estuaries lie dead under asphalt-like slabs of oil. And little has been done about it, beyond the efforts of a handful of United Nations contractors armed with a small budget.

This mess isn't the only one left by the war, or the only one being largely ignored. Some Gulf regions languish in a "hellish daily living environment," says the World Wide Fund for Nature, a Geneva-based conservation group. Yet efforts to coax governments and environmental groups into a coalition to tackle the war's environmental legacy have thus far failed.

The breadth of damage is indeed staggering: some problems will take decades to overcome. Though Kuwait's coastline was spared heavy oiling, all but a few of its 180 miles remain inaccessible because of minefields and barbed-wire. Major progress has been made against the burning oil wells: some 85% have been snuffed. But even with that, tons of pollutants continue to pour into the air daily, producing oily, acid rain in regions up to 1,500 miles away.

In Iran, officials have told visiting Greenpeace scientists, coastal regions across the Gulf from Kuwait have suffered substantial crop damage from black rain. The scientists also report black snow on numerous Iranian mountain peaks, says Nicolo' Barcelo, a Greenpeace spokesman.

A Spreading Blanket

Similar reports have also come from Pakistan, where black rains heavily damaged local wheat crops in the province of Baluchistan, according to the Pakistani press. The Worldwatch Institute, a Washington, D.C., environmental group, says it also has reliable reports of black rain or snow in Bulgaria, Turkey, the southern Soviet Union, Afghanistan and the Himalayan region of Indian Kashmir.

These areas are almost certain to be plagued by damaging acid rains as well, says Britain's Meteorological Office, a government weather arm that has done computer modeling of smoke-plume effects. Such rains, polluted with sulfur from the oil fires, have been linked to the slow destruction of forests, crops and lakes in many parts of the industrialized world.

Most scientists maintain that the smoke isn't ascending high enough to affect global climate. But some aren't so sure. Scientists at the U.S. National Oceanic and Atmospheric Administration acknowledge that at least some "spikes" of oil-fire soot have leaked into the upper stratosphere. Such spikes, because they can't be rinsed out by localized weather, could begin to affect global climate should their concentrations increase, the scientists say.

Smog Alert

Closer to home, both Saudi Arabia and Bahrain, directly downwind from the Kuwait plume, live under smog clouds. Khafji, less than 20 miles from the burning Burgan Field, is often smothered in an acrid pall. Some residents who can afford to have moved away; one Saudi official says the government has given serious thought to evacuating the town.

Kuwait fares little better. While the fires in the Ahmadi field near Kuwait City have been extinguished, many north and south of the nation's population hub continue to burn. This month, as seasonal wind patterns begin to shift, the smog that now bedevils Saudi Arabia will begin to descend on Kuwait.

The gravest danger is on windless days, when stagnant conditions allow the smog—containing sulfur dioxide, carbon monoxide and nitrous oxide—to billow into population centers. The short-term health hazard of such smog is so severe that Kuwaiti officials want to create an early warning system to tell citizens to scramble indoors ahead of the smoke pall, says Ibrahim Hadi, director of Kuwait's Environmental Protection Council.

The oily fallout from the fires is also dumping vast amounts of pollutants into the Persian Gulf, the northern fishing grounds of which have already been decimated by spilled oil. These airborne pollutants are also posing a threat to Kuwait's and Saudi Arabia's water supplies, largely drawn from Gulf desalination plants. At

Legacy of War: Kuwait Oil Fires Are Being Snuffed, But Little Is Done About Tarred Beaches and Lands

Continued From First Page

the core of these pollutants are organic compounds that are difficult to filter out. When combined with chlorine used to disinfect water, they form compounds, known as chlorinated hydrocarbons, that are carcinogenic.

The land is also taking a beating. The Kuwaiti Environmental Action Team, a non-governmental group, estimates that up to 75% of Kuwait's desert floor has been covered by oily fallout. Vast areas are being turned into the equivalent of parking lots as layer after thin layer of tarry precipitate hardens in the desert heat.

Still more of Kuwait's desert has been rendered uninhabitable by minefields and

vastly larger tracts in Saudi Arabia and Iraq have been disrupted by the passage of soldiers and machinery that fought the war. Though some may think of deserts as empty expanses of sand, scientists say they are complex ecosystems dependent on an equilibrium achieved when scattered plant colonies anchor a thin layer of topsoil. Severely disturbed, "a lot of the desert will simply blow away," destroying wildlife habitat and sparse farmland and possibly overrunning roads and towns, says Charles Pilcher, a researcher who has studied the wildlife of the Kuwaiti desert.

Temperatures in the Kuwaiti and Saudi deserts were 10 degrees cooler than normal most of the summer, and up to 25 degrees cooler under the thickest part of the haze. Colonies of desert plants requiring strong sunlight are dying or going into premature reproductive cycles. The same is true of desert mammals and reptiles, says Dr. Pilcher.

Even swallows common to the summer fields of the West aren't immune. Scientists with Britain's International Council for Bird Preservation say recent studies of migratory bank swallows currently flapping across the Kuwaiti desert showed that 90% had been oiled. The birds, en route to winter grounds in Africa, apparently had tried to drink from one of the 200 or so oil lakes formed from the overflow from sabotaged wells, the group says. He says that 1.5 billion birds migrate across the northern Arabian flyway.

Yet except for the oil-well fires and some mine-clearing efforts, few of these problems have been addressed. Kuwait, for example, has only just started work around the edges of its oil lakes, even though much of the oil, were it removed promptly, could be recycled.

Water to Drink

Saudi Arabia's response to the Gulf oil spill has been just as lackluster. Saudi Aramco, the state-owned oil company, along with international volunteers, quickly mobilized wartime oil-spill-containment efforts to protect desalination and power plants and refineries. But Saudi Arabia has largely left its 600 miles of oil-soaked beaches for nature to deal with. It only recently put its first crew to work on a small stretch of beach near Jubail.

Projects such as the one at Adamm Bay have been carried out by a handful of Western contractors working for the U.N.'s International Maritime Organization. Their \$6 million budget is drawn from foreign contributions, says Dave Usher, an IMO official. The far smaller 1989 Exxon Valdez spill in Alaska spilled attracted 11,000 workers and a \$2.5 billion effort.

Saudi officials contend money is the problem. They estimate that the tab to rid the entire coastline of oil could run to \$200 million, which they insist is a big sum for a nation still strapped by billions in war debts. They also contend that the spill, set off by an act of war, shouldn't solely be a Saudi Arabian responsibility.

The cleanup effort the country did muster during the war was narrowly directed at protecting its coastal installations. Its six desalination plants not only represent a billion-dollar-plus investment but were key to providing drinking water to the 500,000 Western troops here, says a spokesman for the country's Meteorological and Environmental Protection Administration. By rid-

ing lion barrels were recovered, a record for any spill—Saudi Arabia also largely extinguished the threat that roaming oil posed to its coastline, the spokesman argues.

At best, Saudi scientists think that shore areas that have unusual environmental value will be tackled in the next stage of the cleanup. Other areas—huge stretches of the northern Saudi Arabian coastline subject to constant wind and wave action—will probably be left to nature. "Fortunately or unfortunately, large sections of the shore don't have very much use. Therefore nobody is complaining that they should be cleaned up," says Abdallah E. Dabbagh, director of King Fahd University's Research Institute, which is conducting spill studies.

The kingdom's failure thus far to act on its beaches has evoked dismay among the many U.S. scientists and spill experts here. They say the delay—in part, environmental apathy, in part a function of the bureaucracy—may both complicate recovery and exacerbate the harm done by previous spills, industrial pollution and land reclamation. While much of the heavily weathered surface oil on the kingdom's coast has lost its toxicity, storms and high tides are constantly losing settled oil back into the Gulf, posing danger anew to birds and other sea life.

"The Saudis' plan was A, we protect the 'dead' plants. B, we get oil off the water, and C, we then worry about our beaches," says a U.S. government consultant here. "What we tried to tell them is that typically, you would begin to try to save your beaches at the same time you are doing these other things. The concept of delaying for months while you do studies is ludicrous."

The price of this neglect is high. Much of Saudi Arabia's once bird-rich intertidal zone is an oily wasteland. Salt marshes and tidal flats—the nursery grounds for shrimp and the very womb of the Persian Gulf food chain—sit poisoned by tar. An estimated 80% of Saudi Arabia's coastal mangrove swamps are dead or dying.

The Value of Spill

Yet one environmental success story shows that speedy intervention on beaches can pay big dividends. When oil began smothering the shores of a chain of small, coral-ringed islands off the coast of Jubail, Saudi Arabia's National Commission for Wildlife Conservation and Development cut through red tape to allow U.N. and U.S. military crews onto the islands by March. The low-lying islands are not only surrounded by perhaps the clearest water to the Persian Gulf, but they are also the predator-free rookeries for huge colonies of terns and two species of sea turtles.

Focusing on Karan, the largest island, crews within days had scraped tons of thickening oil from the beaches and had rounded up and burned perhaps a half century of debris. By the time terns and turtles began showing up for their annual nesting season, they found a habitable environment "instead of an oily death trap," says Peter Symens, a Belgian ornithologist studying the spill.

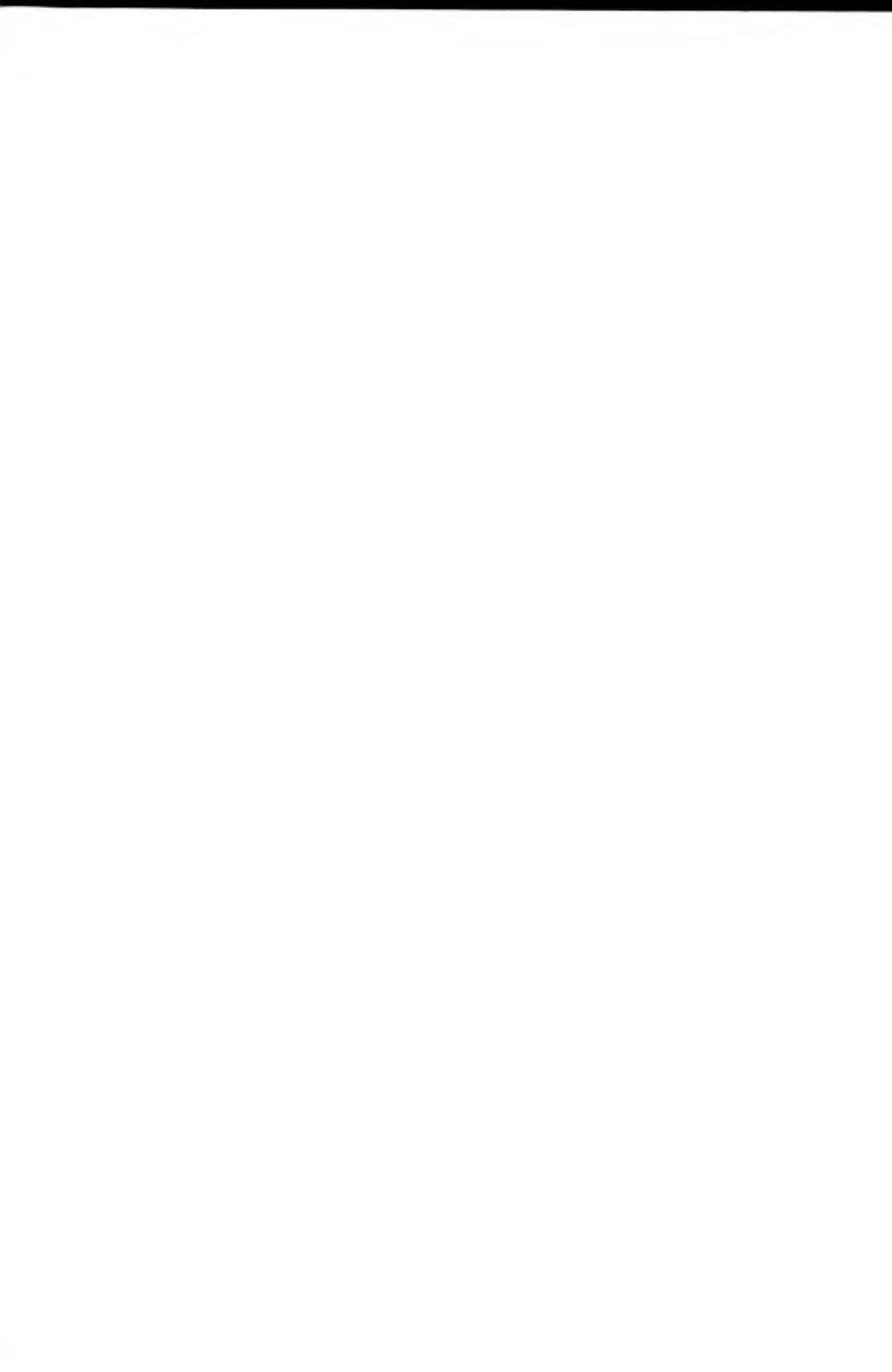
About 65,000 chicks subsequently hatched on Karan, and as many as 10 turtles a night have been returning to the island; their fate, had the island been left covered in oil, would have been grim. Says Peter Vine, a British ecologist in the Gulf: "We're talking about turtles perhaps 30 to 70 years old—born before oil was produced."

ISBN 0-16-037257-7



9 780160 372575

224 93





HECKMAN
BINDERY INC.



APR 93

N. MANCHESTER,
INDIANA 46962

LIBRARY OF CONGRESS



0 018 365 494 9

